THE IRON TRADE REVIEW

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Corporation Appropriates Millions for Construction

Duluth Plant Will be urried to Completion—Mills Not Urging Consumers to Make Contracts—Merchant Pipe Advanced

New York, June 5. (By wire.)—So heavy is the pressure for tonnage upon Steel Corporation mills that appropriations of about $20,000,000 have just been made for extensions to the capacity of various plants. This includes $8,000,000 to $10,000,000 for modernizing the Edgar Thomson plant, $6,000,000 for completing the plant of the Minnesota Steel Co. at Duluth and $3,000,000 for a new large slabbing mill and some miscellaneous finishing mills at Gary. The Duluth plant, which has been going along in a moderate way, will now be pushed to completion as originally planned. The plate capacity at Gary will be greatly enlarged by new construction.

Finishing mills, being perfectly satisfied with the present condition of order books and intent upon improving deliveries, are not very active in encouraging buyers to make contracts. Numerous contracts will expire July 1, and the attitude of buyers in contracting for delivery beyond that period will be a pretty good indication of the strength of the market. Already some consumers are seeking to make contracts, but mills are showing a very conservative disposition. Some makers evidently are confident that premium paying will become more common later in the year. New business is showing some decrease, but considering the higher prices prevailing, bookings are considered good. The tonnage of unfilled orders of the Steel Corporation to be announced June 10, will show an increase of 100,000 tons, despite the fact that May was the largest month in shipments in the history of the Corporation. There is a shortage of some sizes of bars and angles. Some additional purchases of crude steel and scrap have been made by companies which usually produce enough to meet their own requirements. Billets are being shipped long distances to Chicago.

Plates

Plates are very strong. One lot of 2,700 tons has been sold by an eastern mill to a Chicago car manufacturer at 1.50c, Chicago. The leading interest is asking not less than 90 days at Pittsburgh for the delivery of plates.

Railroad Buying

Railroad buying continues fairly heavy. Rail orders for the week aggregate about 80,000 tons, including one lot of 28,000 tons, another of 19,000 and another of 12,000. Among the purchasers were the Missouri, Kansas & Texas, the Buffalo, Rochester & Pittsburgh and the Harriman lines, the last named placing an additional order. Car buying is not quite so active, but the Canadian Pacific is reported in the market for a very large number. Railroads are placing contracts for bridge material freely. The American Bridge Co. has taken 5,000 tons for bridge work for the St. Paul and 8,000 tons for Louisville & Nashville bridges.

Structural Material

In eastern territory, some manufacturers of structural material are still quoting 1.20c, Pittsburgh, but in central western territory 1.25c seems to be well maintained. Structural contracts at Chicago last week amounted to about 5,000 tons. In eastern territory, some of the large building projects, which have been pending for many months are taking more definite form. It is expected that the American Bridge Co. will get the 14,000 tons required for the Biltmore hotel, New York. Milliken Bros. have taken 3,200 tons for the Standard Meter Co. building, New York.

Higher Quotations

Prices of shafting have been advanced by reducing the discounts 2 points. The expected advance of $2 per ton in merchant pipe has been announced. Pipe companies are enjoying exceptionally good business at the present time and numerous inquiries are pending. The demand for boiler tubes is active and the recent advance in the price is being maintained.

Coke

Increased activity has characterized the furnace coke market, and at Pittsburgh, contracts aggregating 147,000 tons were made for last half delivery. The usual contract price is $2.25. A steel company made a contract for about 2,500 tons a month for last half delivery at $2.15, but it is claimed that this coke was not of standard grade. Considerable difficulty is still being experienced in obtaining a supply of labor in the Connellsville region.

Iron Ore Shipments

In view of the fact that unfavorable weather conditions during the first ten days of May seriously interfered with the movement of lake vessels, the record of shipments for the month is remarkable. It indicates that the movement for the year will in all probability show a large increase over that of the record year, 1910. The shipments for May were 5,919,074 tons, the second largest movement for May on record.

PITTSBURGH

Mills Very Busy---New Business Decreased

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., June 4.

The iron and steel industry is continuing at a high productive rate in the Pittsburgh district, and while buying has not been as active, accumulation of new tonnage has been so heavy that makers of steel products show no concern over the temporary lull, and are bending all their energies to place themselves in a better position with respect to deliveries. Pig iron has shown a firmer tone, and there are indications of an upward movement as to prices. Semi-finished steel is scarce, especially open-hearth. Plates are sold for four months ahead, and considerable new tonnage has been added to the mill books. Sheet and tin plate mills are making record production with higher prices on the average. The scarcity of labor continues to be an important factor, and curtails production in some instances seriously. Buying of furnace coke for the last half of 1912, has been resumed.

Pig Iron.—The market for pig iron is quiet and prices are stationary, but a little firmer, especially for third quarter. Some inquiry is appearing for foundry, covering the third quarter and last half, which indicates a steadiness of the furnaces at $13.50, valley, for this grade of iron. There are some inquiries for malleable in small lots, for the third quarter, indicating that the buying movement for this iron will be somewhat more active in the next week or two. One of the leading interests in pig iron reports averages on Bessemer iron for sales in May at $14.2345, and basic $13. This shows a fractional advance for basic and a fractional decrease for Bessemer as compared with April. There has been little inquiry for either of these grades of iron, and the last sale of basic reported was on the basis of $13, valley, though sold from a nearby furnace to a Pittsburgh consumer, but was for last half delivery. The significant point of that sale is that it represented but half of the requirements of the consumer, who sought to cover his entire requirements at the same price, and was unable to do so. Gray forge iron is sold up, and is firm at $13.25, valley, for third quarter. Most of the furnaces are declining to quote on the fourth quarter iron, especially for basic and Bessemer. The chief inquiry for No. 2 foundry iron calls for 7,500 tons for a Pittsburgh consumer for third quarter. There are a number of other inquiries pending for iron covering the third quarter and last half that will likely appear within the next ten days. We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, valley	13.00
Basic, Pittsburgh	13.90
No. 2 foundry, Pittsburgh	14.15
Gray forge, Pittsburgh	14.15
Malleable, Pittsburgh	14.15

(Third Quarter.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, Pittsburgh	14.15
No. 2 foundry, Pittsburgh	14.40
Gray forge, Pittsburgh	14.15
Malleable, Pittsburgh	14.15

Ferro-Alloys.—The demand for ferro-alloys has become much quieter, and, while prices are very firm and stocks very low, most consumers seem to have covered for their immediate requirements and are not urging further demands on the producers. Ferro-manganese for spot shipment is held at $58 and $60, and business for forward delivery is going at $48.50, Baltimore. Ferro-silicon, which is also quiet, is firm at $70 to $71. There is very little change in the low grades of domestic ferro-silicon.

We quote ferro-manganese at $48.50, Baltimore, and $58 to $60 for prompt delivery. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted nominally at $70, Pittsburgh, for prompt and forward delivery; 12 per cent, $22; 11 per cent, $21; 10 per cent, $20, f. o. b. Globe, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—New business in plates and shapes has been somewhat quiet during the past week, a fact which has been of some relief to the manufacturers who are far behind on deliveries, and are having difficulty to make shipments with any degree of promptness. The leading interest is asking not less than 90 days on orders and in some cases four months. The order by the Pennsylvania railroad for 3,000 freight cars is the latest addition to the plate tonnage. Plates for about 2,000 of these cars will be rolled by Pittsburgh mills. Ship building interests have not been active, largely due to the uncertainty regarding legislation affecting the shipping interests. There are pronounced rumors of an advance in plates within the next few weeks, but no official information has been forthcoming as yet. Shapes are also in strong demand and prices are very firm. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.25c. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches 0.05c over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ¼ inch to and including $\frac{5}{16}$-inch plate on thin edge, 0.10c; under $\frac{5}{16}$ and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets. — Some minor sales of sheets at a slight reduction in the market price are reported during the past week, but producers in the middle west, who make these lower prices, are refusing to accept business excepting for prompt shipment on those prices. Production is continuing at a heavy rate, and the May tonnage record promises to exceed the best records of the past in the sheet trade. We quote the market as follows:

Flat Sheets

Black Sheets.—Nos. 10-12, $1.60 per 100 pounds; Nos. 13-14, $1.65; Nos. 15-16, $1.70; Nos. 17-21, $1.75; Nos. 22-24, $1.70 to $1.80; Nos. 25-26, $1.75 to $1.85; No. 27, $1.90; No. 28, $1.95; No. 29, $2.00; No. 30, $2.10.

Blue Annealed.—Nos. 3-8, $1.35 per 100 pounds; Nos. 9-10, $1.40; Nos. 11-12, $1.45; Nos. 13-14, $1.50; Nos. 15-16, $1.60.

Galvanized.—Nos. 10-11, $2.00 per 100 pounds; Nos. 12-14, $2.10; Nos. 15-16, $2.25; Nos. 17-21, $2.40; Nos. 22-24, $2.50; Nos. 25-26, $2.70; No. 27, $2.85; No. 28, $3.00; No. 29, $3.10; No. 30, $3.30.

Roofing Sheets

Galvanized.

Net extras on all gages per 100 pounds.

Corrugated 2-inch, 2½-inch, 3-inch and 5-inch corrugation, 5c; 2 V crimped without sticks, 5c; corrugated 1¼-inch corrugation, 10c, 3 V crimped without sticks, 10c; pressed

standing seam with cleats, 15c; plain roll roofing with cleats, 15c.

Painted Roofing.

12 to 18 gage, inc., 5c; 19 to 24 gage, inc., 10c; 25 to 28 gage inc., 15c.

Tin Plate.—The big canneries are now specifying more freely than ever on tin plate, and while new business is not important, tin plate manufacturers are finding it difficult to maintain shipments at a rate that will satisfy the consumers. Inquiries for supplemental tonnages for tin plate by large consumers are being treated as new business, and most of the manufacturers are asking the higher base price of $3.50 for coke tins, while here and there independents will extend existing contracts on the $3.40 base. Much of this, however, is at an advance over the original contract price. We quote the market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.40 to $3.50, f. o. b. mill, Pittsburgh district.

Rails and Track Material.—Specifications for light rails have been improving, and new business has been coming out in good volume, the market holding firmly to the last advance, and such setback to demand as was caused by the advance has been entirely overcome. In standard sections, there has been some loss of ground on deliveries by mills. On open-hearth rails, which have been in such strong demand, the leading interest is from two to three weeks behind on shipments. For Bessemer rails, the situation is more easy, and orders can be filled more promptly. Most of the tonnage coming out at this time is for small lots of 2,000 to 3,000 tons, but inquiries indicate some considerable figuring on large orders by eastern roads, which will call for delivery during the last half of the year. The production of rails and of semi-finished steel for the month of May has been fully equal to the record month of the year, and bids fair to make the first half of 1912 the heaviest ever known by the leading interest. The market is quoted as follows with the base price on open-hearth steel rails 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.15c, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.23c to 2.25c, Pittsburgh.

Railroad Spikes

4¼, 5 and 5½ and 9-16	$1.45
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x 7/8	.20
3, 3½, 4 and 4½ x 3/8	.30
2½ x 3/8	.40
2½, 3 and 3½ x 7/8	.60
2 x 5-16	.80

Steel.—Semi-finished steel is in good demand for spot shipment, and prices show no weakening. There is a continued scarcity in open-hearth rolling billets and sheet bars. Large consumers of open-hearth steel have restricted their offerings to $22, Pittsburgh. Other consumers have paid $1 higher, and makers are asking $23, Pittsburgh, for the third quarter on both rolling billets and sheet bars where they have any to spare. It is understood that some other large independent makers of semi-finished steel are oversold, and are buying odd lots to care for their own requirements and to maintain contract shipments. The demand for forging billets is very strong, and the price firm. While nominally held at $28, it would be difficult to place tonnage at that price at this time, one quotation of $29 having been made the past week.

We quote the market as follows:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $22.00 to $23.00, with the usual extra for size and analysis, and open-hearth rolling billets, $22.00 to $23.00. Bessemer sheet and tin bars are quoted at $22.00 to $23.00, and open-hearth sheet bars are quoted at $22.00 to $23.00, f. o. b. Pittsburgh, for second quarter, with full freight to destination added. Forging billets are quoted at $28, Pittsburgh.

Hoops and Bands.—There is very little change in the demand for hoops and bands, specifications continuing very satisfactory, but new business is of no special importance. Mills are making good shipments, and report May tonnage as among the best for some time.

We quote the market as follows:

Hoops in carload lots, 1.25c to 1.30c, Pittsburgh; in less than carload lots, 1.40c; bands 1.20c, base, with net extras, as per standard steel.

Merchant Bars.—Specifications are running heavy in merchant bars, and there is a fair amount of new business coming out for this season of the year, due to the extensive reinforced concrete construction work now under way throughout the country. The new business is being taken at 1.20c, Pittsburgh, and the market seems to have been firmly pegged at that price. Steel shafting is somewhat better in tonnage, and specifying is on a larger scale while prices are being firmly held. The demand for iron bars has improved and is affecting the prices to some extent, the past week showing practically no business below 1.35c, although attractive tonnage might still be placed at the minimum of 1.30c.

We quote the market as follows:

Common iron bars, 1.30c to 1.35c, Pittsburgh; Bessemer and open-hearth steel bars, 1.20c; plow and cultivator, 1.25c; channels, angles, zees, tees, under 3 inch, 1.25c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35 advance. Cold rolled, and ground shafting, 55 per cent off in carloads and 60 and 10 per cent in less than carloads, delivered in base territory.

Muck Bar.—There is a stronger tone to the muck bar market, and there is more buying by the bar manufacturers and other consumers. New business is being accepted only at the advanced price, which is $1 higher than during the past several months. The surplus stocks of muck bar are now about consumed. We quote $29 to $30, Pittsburgh.

Structural. — Some good lettings were reported during the past week on structural material, principally railroad orders, but the market is showing a much firmer tone both for shapes and for fabricating. Fabricating shops are generally better supplied with business, and report some improvement in prices, although not what has been desired. Among the more important tonnages placed were 5,000 tons of bridge material for the Chicago, Milwaukee and St. Paul, and 8,000 tons of material for the Louisville & Nashville Railroad, which were awarded to the American Bridge Co. In small contracts, the tonnage aggregates a fairly good volume of business, which has been distributed among the fabricating companies.

We quote the market as follows:

Beams and channels, 15 inches and under, zees, 1.25c; tees, 1.25c; angles, from 3 to 6 inches, 1.25c; over 6 inches, 1.35c; universal and sheared, 1.30c; over 15 inches, 1.35c; plates, 6¼ inches wide and wider, 1.35c.

Merchant Pipe.—The merchant pipe trade at the opening of June is confronted with an advance that has been general, amounting to $2 a ton on all sizes below 6 inches. The advance was not expected by many until July 1. The leading interest also advanced the oil country card of casing and tubing on sizes below 7¼ inches. The pipe market is generally filled up and inquiries are increasing, 270 miles of various sizes of steel line pipe and casing now are being bid upon. Included in these inquiries are 35 miles of 4-inch steel line pipe, 12 miles of 8-inch, 70 miles of 12-inch, 25 miles of 4 to 6-inch, and 18 miles of 2, 3 and 10-inch. Another inquiry calls for 70 miles of 6⅝-inch, 12 miles of 2-inch and 6 miles of 8¼-inch. A third inquiry is for 32 miles of 14-inch. Most of these are for shipment into West Virginia and Pennsylvania. There is a tentative inquiry for 40 miles of 8 and 10-inch pipe for Canadian delivery, and 20 miles of 10-inch for West Virginia delivery, and 50 miles of 6 and 8-inch for Ohio delivery. These orders are in addition to large buying for western users of pipe, which have been rapidly filling the makers' books. Most of the pipe mills are now operating within 90 per cent of their capacity, and some at

an even higher rate, while shipments are going forward briskly.

We quote the official discount to jobbers subject to the usual preferential discount to the large buyer as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼ inch.....	73	53	68	48
⅜ inch	74	64	69	53
½ inch	77	67	72	59
¾ to 1¼ inch.....	80	72	75	64
2 to 3 inches.....	81	74	76	65
	Lap weld.			
2 inches	78	71	72	63
2½ to 4 inches.....	80	73	74	66
4½ to 6 inches.....	79	71	73	65
7 to 12 inches.....	77	68	71	61
13 to 15 inches....	55	..	47	..
Extra Strong, Plain Ends.				
			Butt weld.	
⅛, ¼, ⅜ inch.....	69	59	65	55
½ inch	74	68	70	63
¾ to 1¼ inch.....	78	72	74	65
2 to 3 inches.....	79	73	75	66
Extra Strong, Plain Ends.				
			Lap weld.	
2 inches	75	69	71	63
2½ to 4 inches.....	77	71	74	66
4½ to 6 inches. ...	76	70	72	65
7 to 8 inches.....	70	60	65	55
9 to 12 inches.....	65	55	60	50
Double Extra Strong, Plain Ends.				
			Butt weld.	
½ inch	64	58	60	52
¾ to 1¼ inch.....	67	61	63	55
2 to 3 inches.....	69	63	65	57
Double Extra Strong, Plain Ends.				
			Lap weld.	
2 inches	65	59	61	52
2½ to 4 inches.....	67	61	63	57
4½ to 6 inches.....	66	60	62	56
7 to 8 inches.....	60	50	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

The above discounts are for full weight pipe, subject to a variation of 5 per cent, merchant pipe, when specified, being furnished up to 6 inches at one point higher discount (lower price).

Boiler Tubes.—The demand for boiler tubes continues quite active, and the recent advance in price is being maintained on steel tubing with specifications continuing at a very heavy rate. New business is largely in locomotive boiler tubes, although the general trade has broadened out materially.

The official discounts on steel and charcoal iron boiler tubes follow with the usual additional 5 and 5 off:

	Steel.	Iron.
1¼ inch	49	48
1¾ to 2¼ inch.....	64	50
2½ inch	66½	55
2¾ to 3¼ inch.....	71½	57½
3½ to 4½ inch.....	74	60
5 and 6 inch.....	66½	..
7 to 13 inch.....	44	

To destination east of Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire Products.—Specifications are much better for plain wire and mills are somewhat behind on deliveries. Prices on wire nails are fairly steady, while specifying is very satisfactory to the makers. New business is quiet, and such tonnage as is offered by consumers with contracts now placed, is being accepted freely without insisting on the advance of 5 cents, and a few of the independent mills in some instances are accepting new business at the rate of $1.55. The leading interest, however, is maintaining the market at $1.60, and some of the larger producers are also holding to this price and believe that after July 1 the softening tendency will have been largely eliminated. Most of the wire mills are refusing to accept new business below the nominal market that calls for deliveries after July 1.

We quote the market as follows:

Wire nails, jobbers, carload lots, $1.60; retailers' carload lots, $1.60 to $1.65; cut nails (western makers), jobbers' carload lots, $1.55 to $1.60, painted barb wire, jobbers' carload lots, $1.60; retailers' carload lots, $1.65 with 30c for galvanizing; plain wire to jobbers in carloads, $1.40; and to dealers, in carloads, $1.45; polished staples, $1.60; galvanized staples, $1.90.

Wire Rods.—While the market for wire products has shown slight softening tendencies, the demand for rods has continued very heavy. Specifications are also on a large scale, and prices are much firmer at $26 to $26.50, the rod mills being unable to take care of new tonnage for some time ahead. Many of the wire producers are consuming their own rod production and are unable to handle outside trade at all. We quote $26 to $26.50 for Bessemer and open-hearth wire rods.

Coke.—The coke market has shown more activity during the past week, and quotations are lower. In contract sales, a total of 147,000 tons were closed by three furnaces, one calling for 7,500 tons a month, a second for 11,000 tons a month and a third contract of 6,000 tons a month of special grade. These three contracts represent the important deals concluded during the week. There was also one contract for about 2,500 tons a month for the last half closed at $2.15, ovens, but it is claimed that this coke was not of standard grade. The coke was bought by a steel company which produces most of its own coke. In the spot coke market, the situation has improved during the past week by the resumption of one eastern furnace which has absorbed 500 tons a day of Connellsville coke, and seven other stacks are to go in this month, which have been out for repairs and relining, which will, it is believed, completely absorb the spare tonnage of spot coke. The last sales, however, were reported at from $2.15 to $2.25, ovens. Foundry coke has been fairly active at from $2.50 to $2.75 for spot shipment, and contracts are also being closed at from $2.75 to $2.90 on this grade of coke. The Connellsville *Courier* reports for the week ending May 25 a total of 31,506 ovens active with a production of 394,316 tons, as compared with 31,495 ovens active and a production of 398,956 tons for the preceding week, a loss of over 4,640 tons, merely accentuating the extreme shortage of labor in the Connellsville region, and their inability to bring the production up to the required amount. We quote standard Connellsville furnace coke for spot shipment at $2.15 to $2.25, ovens, and on contract $2.25. For standard Connellsville foundry coke, we quote, for prompt shipment, and on contract, $2.75 to $2.90, ovens.

Old Material.—Some fairly active inquiries and buying of scrap have appeared during the past week, and consumption is going on at a heavy rate. Consumers' stocks appear to be low, while dealers and those holding scrap say that their supplies are extremely limited. A good many of the dealers are holding out for better than $13.50 for heavy melting steel. Some are quoting $13.75, but the sales reported, running from a few hundred tons to 1,000 and 1,500 tons, do not show anything better than $13.50, while the average price offered by dealers is $13.25, with some cases a trifle higher. The Pennsylvania railroad is opening bids this week on from 40,000 to 50,000 tons of old material. About 20,000 tons of this is composed of steel rails and the remainder miscellaneous scrap, upon which there has been some keen bidding by not only the dealers, but large consumers. There has been an advance in borings and turnings from $10.75 to $11. Low phosphorus iron has advanced from $15.75 to $16, and is very strong at the higher price. Bundled sheet scrap is also firmer at $12 to $12.25, and is scarce. Malleable scrap is going at $12.50 to $13. All of these prices represent some advance over a week ago. Eastern and western consumption is on a much stronger basis, and is giving a strong undertone to the local market. We quote gross tons, delivered in the Pittsburgh district, including Monessen, Brackenridge, Steubenville and Follansbee, as follows:

Heavy melting scrap	$13.25 to 13.50
Rerolling rails	13.75 to 14.50
Malleable	12.50 to 13.00
Bundled, sheet scrap	12.00 to 12.25
Iron axles	22.00 to 22.50
Old iron rails	15.00 to 15.50
Stove plate	9.00 to 9.50
No. 1 wrought scrap	13.50 to 14.00
Old car wheels	13.25 to 14.50
Low phosphorus	15.75 to 16.00
Machine shop turnings	10.75 to 11.00
Cast borings	10.00 to 10.25
No. 1 cast scrap	12.50 to 12.75

The Newark Machine Co., Newark, O., has reduced its capital stock from $155,000 to $1,550.

CHICAGO

New Business in Finished Lines Increasing

Office of THE IRON TRADE REVIEW,
1328 Monadnock Blk., June 4.

Some rather significant increases in new business, coupled with continued quiet in the pig iron market, form the chief features of interest in the western situation. The Corporation subsidiaries in the Chicago district have been taking new business at an increasing rate for the past two weeks, and last week it was practically equal to the producing capacity. This, coupled with a steady stream of specifications, has resulted in increasing the congestion at the mills. In some few instances, certain eastern independent interests are able to take business for delivery in from three to four weeks, but as far as the great majority of the tonnage is concerned, September is the best that can be offered and in many cases October delivery is promised.

Pig Iron.—The market has relapsed into a state of quiet which indicates that the foundries in the west are well covered for their immediate requirements and are hesitating on purchases for extended delivery in the hope that they may stay the advance which seems inevitable. There is an inquiry for 1,500 tons of malleable in the local market, but otherwise very little business is pending. One of the interesting features in the situation is the attitude of the Steel Corporation toward the pig iron market and some heavy purchases of basic for shipment to the Chicago mills would not be unexpected. Southern foundry iron remains quiet and prices are very buoyant in spite of few sales. There is no disposition in any quarter to delay shipments and the full contract allotments are being taken out freely.

The following prices represent the market for Chicago delivery, except northern foundry and malleable Bessemer, which are quoted f. o. b. local furnaces:

	Third quarter.	Last half.
Lake Superior charcoal	$15.75	15.75
Northern foundry No. 2	14.50	14.50
Southern foundry No. 2	15.35	15.85
Southern silv'ries, 5 per cent sil.	16.10	16.35
Jackson co. silveries, 8 per cent	17.90	17.90
Malleable Bessemer	14.50	14.50
Alabama basic	15.35	15.60

Billets.—The market remains firm and is characterized by a continued scarcity of billets, few mills in this territory being able to take new business in any appreciable quantity. There is a fair number of small orders with considerable new business in prospect. We quote, open-hearth forging billets, $28, Chicago; re-rolling billets, $24.50.

Merchant Bars.—Deliveries continue to be the paramount issue in the general steel situation and prices remain firm at 1.25c, Chicago, with a marked upward tendency. Specifications against contracts are very heavy, one leading producer reporting a greater tonnage of specifications for May than at any time in the past 18 months. Otherwise the general situation shows no change over that of the previous week, mills continuing to run behind on deliveries and in several cases the periods for delivery have been extended. Shafting is firm at 65 per cent off list for carloads and 62 per cent for less than carloads. No new business of any nature is being actively sought. Predicated on the crowded condition of the mills, the demand for store material continues heavy and prices are very firm.

We quote, f. o. b. Chicago, as follows:

Bar iron, 1.25c; hard steel bars, rerolled, 1.25c to 1.30c; soft steel bars, bands and small shapes, 1.38c base; hoops, 1.48c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting 65 per cent off list for carload lots, 62 per cent off for less than carloads.

On iron and steel from local stock, we quote as follows:

Bar iron, 1.50c to 1.60c per pound base; soft steel bars, 1.60c to 1.65c per pound base; soft steel hoops, 1.80c to 1.90c, full extras.

Structural Material.—Considerable business is reported in structural material and prices remain very firm, the situation as regards the fabricators being unchanged. The total tonnage taken last week in this territory amounts to 4,794 tons, the leading interest taking but 168 tons of this amount for the Empress theater, St. Louis. Contracts have been let by the city of Spokane, Wash., for 371 tons for the city hall, and the Flume, Culvert & Machine Co., of Minneapolis, has contracted for 220 tons of angles and rods for a flume near Emmett, Idaho. The Minneapolis Steel & Machinery Co. has taken 224 tons from Salt Lake City, Utah, for a high school building and 1,945 tons have been taken by the South Halsted Street Iron Works for the Society Brand building at Chicago. The Illinois Steel Bridge Co. has taken 135 tons from the Fort Smith Light & Traction Co. for a viaduct over the Iron Mountain railroad tracks at Van Buren, Ark. A contract has been let to the Noelke-Richards Iron Works for 1,200 tons of structural material for the Bippe-Polk building, at Des Moines, Ia., and 531 tons for the Republic building at Kansas City has been placed with the Kansas City Structural Steel Co. The Louisville & Nashville is in the market for 8,000 tons of bridge material.

We quote, mill prices, f. o. b. Chicago, as follows:

Beams and channels, 15 inch and under, 1.43c. For extras, see Pittsburgh report.

Store prices are as follows:

All angles, 3 inches and larger, including 6 inches, $1.70 to $1.75 per 100 pounds; angles over 6 inches, $1.75 to $1.80 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.70 per 100 pounds, base; channels, 3 inches and larger, $1.70 per 100 pounds, base.

Rails and Track Fastenings.—The situation remains unchanged and there appears to be no new business in the market. As the mills are crowded, however, producers express themselves as being satisfied with the situation.

We quote, light rails, f. o. b. Chicago, and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 25 to 45-pound, 1.20c to 1.25c; 14 to 20-pound, 1.25c to 1.30c; 12-pound, 1.30c to 1.35c; 8-pound, 1.35c to 1.40c.

Light section relayers, 45 pounds and under, subject to inspection $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c; railroad spikes, 1.55c to 1.60c, smaller size spikes, 1.65c, base; track bolts with square nuts, 1.95c to 2.05c base.

Plates.—The week was characterized by no material changes. Mills continue to run further behind and

deliveries are the determining factor of the situation. The leading producers report that they are unable to make deliveries before the first part of October. There is as yet no advance in prices, although the market is very firm and there is evidence of a marked upward tendency. The Chicago Junction railway has let a contract with the American Locomotive Co. for six six-wheel switching locomotives. The Frisco system has let contracts for 400 ballast cars to the Hart Convertible Car Co. Contracts have been let by the same buyer to the American Locomotive Co. for 25 simple Mikado freight locomotives for the Chicago & Eastern Illinois and 40 simple consolidation locomotives for the St. Louis & San Francisco. Contracts have been placed with the German-American Car Co. for 41 tank cars for the Mineral Point Zinc Co.

We quote, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6⅝ to 100 inches wide, 1.43c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, $1.70.

Sheets.—No advance in sheet prices has materialized, although the continued crowded condition of the mills seems to indicate an upward turn. Car business continues to be fair, indicating a prospect of considerable new business.

We quote store prices as follows:

Blue annealed, No. 10, 2.00c; No. 12, 2.05c. Box annealed, No. 28, 2.35c. Galvanized, No. 28, 3.45c.

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

Wire Products.—The tone of the market is unchanged on a basis of 1.60c, Pittsburgh, although the producers have not cleaned up the cheap tonnage on their books. The continuance of favorable weather conditions throughout the west shows a further increase in the movement of agricultural wire.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.78; retailers' carload lots, $1.88; retailers' less than carload lots. $1.98; painted barb wire, jobbers' carload lots, $1.78; retailers' carload lots, $1.88; retailers' less than carload lots, $1.98, with 30c for galvanizing; plain wire, jobbers' carload lots, $1.58; retailers' carload lots, $1.63.

Merchant Pipe and Tubes.—The condition of the merchant pipe market reflects the general market conditions and producers are having considerable difficulty in making deliveries. Prices remain unchanged with a good demand for common sizes.

We quote, store prices, on merchant pipe and tubes, f. o. b. Chicago, as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
Butt.				
⅛ inch and ¼ inch.	71.2	50.2	63.2	42.2
⅜ inch	75.2	64.2	68.2	52.2
½ inch to 1½ inch..	78.2	69.2	71.2	59.2
Lap.				
2 inch	76.2	68.2	68.2	58.2
4½ inch to 6 inch..	77.2	68.2	69.2	60.2
Card Weight.				
7 inch to 12 inch...	74.2	63.2	67.2	56.2
Extra Strong Plain Ends.				
Butt.				
⅛, ¼, ⅜ inch.....	66.2	54.2	60.2	48.2
½ inch	71.2	59.2	65.2	53.2
2 inch to 3 inch....	76.2	64.2	....	....
Lap.				
2 inch	72.2	60.2	66.2	54.2
7 inch to 8 inch....	66.2	54.2	60.2	48.2
Double Extra Strong.				
Butt.				
½ inch	59.2	47.2	....	....
¾ inch to 1½ inch.	62.2	50.2	....	....
Lap.				
2 inch	60.2	48.2	....	....
4½ inch to 6 inch..	61.2	49.2	....	....
7 inch to 8 inch....	54.2	42.2	....	....

Tubes.

	Lap weld steel.	Charcoal iron.	Shelby seamless.
	Per cent.	Per cent.	Per cent.
1 inch	39	..	57½
1¼ to 2¼ inch.....	55	40	35
2¾ to 3¼ inch.....	65	50	46
3½ to 4½ inch.....	67½	50	46
5 to 6 inch.....	55	..	..

Cast Iron Pipe.—The situation is characterized by continued quietness, but one small sale of 200 tons of 6-inch pipe to the city of Hammond, Ind., being reported. Considerable new business is in prospect, however, which will develop into active inquiries during the ensuing week.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $27.00, 6 to 12 inches, $25.00, larger sizes, $24.50; gas pipe, $1 a ton higher.

Old Material.—The general conditions of the market for old material remain unchanged with the exception of a slight tendency toward weakness in railroad wrought and the stiffening of busheling, which is quoted $10.25 to $10.75. A number of railroad lists have been issued, the largest of which is offered by the Minneapolis, St. Paul & Sault Ste Marie railroad. The total of this is 1,406 tons, the principal items being 300 tons of No. 1 railroad wrought and 80 tons of heavy uncut sheet steel. Bids will be closed on June 6. The Grand Trunk system has issued a list amounting to 797 tons on which bids will be closed June 10. The principal items are 110 tons of malleable castings and 75 tons of uncut bolsters. A list amounting to 867 tons, on which bids were closed June 4, was issued by the St. Louis & San Francisco Railroad Co., the principal items being 150 tons of No. 1 railroad wrought and 60 tons of miscellaneous car wreckage. A list of 813 tender and truck wheels, on which bids were closed June 5, was issued by the Chicago & Northwestern railroad. The tendency toward weakness on No. 1 and 2 railroad wrought is supported by the fact that a considerable amount of it has been offered in the last two weeks.

We quote, for delivery in consumers' yards, Chicago, as follows:

Gross Tons

Old car wheels	$13.25 to 13.75
Old iron rails	16.50 to 17.00
Rerolling rails (5 ft. and over)	13.00 to 13.50
Old steel rails (3 ft. and under)	12.25 to 12.75
Frogs, switches and guards	12.00 to 12.50
Heavy melting steel	12.00 to 12.50
Shoveling steel	11.75 to 12.25

Net Tons

No. 1 R. R. wrought	$12.75 to 13.25
No. 2 R. R. wrought	11.75 to 12.25
Arch bars and transoms	15.00 to 15.50
Knuckles, couplers and springs	11.50 to 12.00
Shafting	14.50 to 15.00
Iron car axles	19.00 to 19.50
Steel car axles	15.75 to 16.25
Locomotive tires	13.50 to 14.00
Dealers forge	10.00 to 10.50
Pipe and flues	9.00 to 9.50
No. 1 cast	12.00 to 12.50
No. 1 busheling	10.25 to 10.75
No. 2 busheling	7.50 to 8.00
No. 1 boiler cut	8.25 to 8.75
Boiler punchings	12.50 to 13.00
Cast and mixed borings	6.50 to 7.00
Machine shop turnings	7.25 to 7.75
Railroad malleable	11.75 to 12.25
Agricultural malleable	10.50 to 11.00
Angle bars, splices, etc., iron	14.00 to 14.50
Angle bars, steel	11.50 to 12.00
Stove plate and light cast scrap	10.00 to 10.50

Finishing Mills Crippled

The breaking down of a blooming mill engine at the Duquesne plant of the Carnegie Steel Co. has temporarily crippled the finished capacity of that works but the open-hearth plant continues in operation and the ingot output is being shipped to other finishing mills. It is expected that repairs will be made and the plant will be again in normal operation in about a week.

For New Equipment.—The Sterling Steel Foundry Co., Braddock, Pa., which has increased its capital from $250,000 to $500,000, advises that part of the added capital will be used for proposed new equipment and additions to its plant, which will increase the capacity about one-third to one-half over the present condition.

Contract Awarded.—The Elkhart Bridge & Iron Co. has taken a contract for the fabrication and erection of the Thirty-first street bridge at Lorain, O., requiring 270 tons.

PHILADELPHIA

May Output of Eastern Mills Heavy

Office of THE IRON TRADE REVIEW,
Philadelphia, June 4.

May proved another period of heavy output for eastern steel mills, some of which made new high monthly records in several years. Labor shortages, of which reports were numerous in the east, cut the month's production with some mills to below April. New business is lighter, but steel makers are well supplied with orders. The iron mills do not seem to be doing so well. Prices are firm with some deviations in shapes and bar iron. Merchant pipe has been advanced $2 a ton. Pig iron is quieter. The pipe works remain active buyers. Eastern steel makers are sounding out the fourth quarter basic market. Scrap is slow.

Pig Iron—The market is quieter except in certain directions, such as the Delaware river pipe works, which are negotiating and closing for considerable tonnage. The leading pipe interest bought 2,000 tons of low grade iron for western Pennsylvania shipment from a maker in the Pittsburgh district, and has negotiations on for a round tonnage for delivery in this district. Another pipe maker is still in the market for 5,000 tons of No. 3 and forge for July-August shipment. Good grades of pipe iron continue to bring about $14.75, delivered, and for the off lots, about $14.50, delivered. Standard eastern Pennsylvania No. 2X has firmed up to about $15.25 to $15.50, Philadelphia and vicinity, and some sales are being made 25 cents higher. Some eastern makers have sold so freely ahead against their active capacity that they have only a small tonnage to offer for third quarter and coke uncertainties are deterring them from blowing in additional furnaces. The Pennsylvania railroad was still taking bids this week for 4,300 to 8,600 tons of charcoal and coke iron for Altoona. The Norfolk & Western railroad has distributed 4,500 tons of coke and charcoal iron for last half for Roanoke, much of the coke iron going to a Virginia maker. The local locomotive builder is credited with having made purchases of about 2,000 tons additional the past week.

A leading eastern steel works has begun to sound the market on its fourth quarter requirements, estimated at 30,000 to 35,000 tons, and at a satisfactory quotation would probably close for this amount. Another eastern steel works is making offers for third quarter which are below the schedules of eastern makers. Generally, $15.25, delivered, is asked on forward basic. After the recent active movement in low phosphorus, standard and special Bessemer in this market, which amounted to fully 20,000 tons, sales of low phosphorus are of moderate tonnage. On the week's sales, the equivalent of $19.75, Philadelphia, on standard iron was done. One lot of 500 tons of malleable for June is pending. The Oxford, N. J., furnace is being blown in this week.

We quote for prompt and third quarter shipment at consumers' plants in Philadelphia and vicinity, as follows:

Eastern Pa. No. 1X foundry	$15.50 to 15.75
Eastern Pa. No. 2X foundry	15.25 to 15.50
Eastern Pa. No. 2 plain	14.75 to 15.00
Standard gray forge	14.50 to 14.75
Basic (Eastern and Central Pa.)	15.00 to 15.25
Virginia No. 2X	15.80
Southern No. 2	15.00 to 15.25
Standard low phosphorus	19.50 to 20.00

Coke.—Spot furnace coke is weaker in the eastern market, but contract coke is firmly held. Connellsville spot for June shipment is being offered at $2 to $2.10, ovens. On contract, asking prices of the ovens range from $2.35 to $2.50, ovens.

Finished Material.—May output of the finishing mills of the east was heavy and generally reached the largest tonnage of the present movement. Some makers produced in May the heaviest monthly tonnage over a period of several years. With a few mills, the output fell a little below that of May, but this was due largely to labor shortages, which continues to be a factor of serious importance to the eastern industry. In new business, the volume is not as large, but the mills as a rule are well supplied with orders and are not much concerned over this development. A few eastern mills which apparently expect more favorable price conditions later and have not booked themselves far ahead, are nevertheless receiving a sufficient amount of quick shipment business to keep them running almost full.

Prices are usually firm, but easiness still occasionally appears. The spread is not apparent in structural shapes. Now and then 1.20c, Pittsburgh, is done, but one eastern mill has advanced its price on standard shapes to 1.30c, Pittsburgh, effective June 1. Plates are steady at 1.25c, Pittsburgh. Merchant pipe was advanced one point, or $2 a ton, effective June 1, on all sizes, black or galvanized, from ⅛ up to 6 inches. Forging billets are stronger as eastern makers have restored the full $5 differential over rolling billets and are quoting $26, Pittsburgh, or $28.40, Philadelphia. For rolling billets, their price is $21, Pittsburgh, or $23.40, Philadelphia. Sheets are in good demand and the eastern market reflects the slower deliveries of mills in the Pittsburgh district. Steel bars are firm, but in bar iron, eastern makers seem more disposed to accept 1.30c than a month ago.

The Chesapeake & Ohio railroad took bids this week on its new pier at Newport News, Va., 8,000 to 10,000 tons. The Fairmount hotel, this city, is being revised. The John Sharp building, Washington, 400 to 500 tons, is up. The Norfolk & Western is figuring upon bridge work.

Eastern steel makers were asked to bid this week on four additional proposed vessels which will require about 5,500 tons of plates and about 2,500 tons of shapes. A large volume of ship building work is now pending in the east. An inquiry for 4,000 tons of plates for export is current.

We quote, delivered in Philadelphia and vicinity, as follows:

Plain structural shapes, 1.35c to 1.40c; tank plates, 1.40c; steel bars, 1.35c; common bar iron, 1.30c to 1.35c; cut nails, 1.65c to 1.70c; blue annealed sheets, No. 10 gage 1.55c to 1.60c; 4 x 4-inch open-hearth rolling billets, $23.40 to $24.40; forging billets, $28.40. Extras shown under Pittsburg report. Philadelphia warehouse prices 1.75c for plates, shapes and bars.

Old Material.—The quieter condition of the eastern scrap market continues. The range of prices is very little altered, though it is nom-

inal in some grades and usually sales are made at the low point. Railroad wrought is weaker by about 25 cents and few, if any, of the iron mills are now coming into the market. One steel maker has been picking up odd lots of choice railroad steel at around $13.50, delivered. Car wheels are in demand around $14, delivered. The various eastern railroads are closing this week on their monthly scrap lists which have offerings of 40,000 to 50,000 tons. We quote, gross tons, delivered to consumers in eastern Pennsylvania and western New Jersey, as follows:

Old iron rails	$16.50 to 17.00
Old steel rails (rerolling)	14.75 to 15.25
No. 1 heavy melting steel	13.50 to 14.00
Old car wheels	14.00 to 14.25
Old iron axles	23.00 to 24.00
Old steel axles	17.50 to 18.00
No. 1 railroad wrought	15.75 to 16.25
Wrought pipe	12.50 to 13.00
Cast borings	9.00 to 9.50
Machine shop turnings	10.00 to 10.50
Heavy cast	13.50 to 14.00
Malleable	11.75 to 12.25
Stove plate	10.50 to 11.00
No. 1 forge	12.00 to 12.50

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

CINCINNATI

Low Prices for Ironton Pig Iron

Office of THE IRON TRADE REVIEW, 503 Mercantile Library Bldg., June 4.

Pig Iron.—The local pig iron market remains at practically a standstill. All efforts of producers in the Ironton district to re-establish a price of $13.50, furnace, for southern Ohio No. 2 foundry iron have been unsuccessful, and it is still selling for from $13.00 to $13.25, Ironton. These makers have been handicapped in securing better quotations principally because there is such a small amount of business being transacted in that territory that they have practically nothing upon which to base their demands. A few furnaces, which refused to better the market when the others began cutting prices a few weeks ago, are still adhering to $13.50, but are not doing any business at this figure.

The southern situation is unchanged, and while one or two small sales are reported now and then to have been made below $11, Birmingham, for No. 2 foundry iron, the general market is holding well at this figure for both spot and third quarter delivery. Very little iron is being sold for shipment through the fourth quarter, and this generally brings about $11.25, furnace. Inquiries for both northern and southern iron are few and small, and sales are generally made in scattered lots. However, in some cases, certain dealers are aggregating a fairly good business, and report a satisfactory forwarding movement. Stocks in furnace yards in the south are being steadily reduced, which fact is one of the few good aspects of the present market. High silicon iron appears to be strengthening, and $16 is now being generally quoted for 8 per cent silicon. The Manistique furnace, at Manistique, Mich., which makes the Champion brand of Lake Superior charcoal iron, blew in recently, and will be able to produce from about 90 to 100 tons of this grade a day. The Anchor furnace, at Oak Hill, O., also was recently put into blast, and will manufacture Hanging Rock warm blast charcoal iron. It is the last of a group of old charcoal furnaces in that district to be operated. Recent sales include 1,000 tons of malleable which went to a southern Ohio user for the last half, and 1,000 tons of charcoal iron, which was sold into Michigan territory. The only inquiry of any importance calls for 1,000 tons of Nos. 2 and 4 foundry iron to be delivered into northern Ohio territory, and the company states it can use either northern or southern grades, but circumstances favor the former. With freight rates $3.25 from Birmingham and $1.20 from Ironton, we quote Cincinnati prices as follows:

Southern foundry No. 2	$14.25 to 14.50
Southern foundry No. 3	13.75 to 14.00
Southern foundry No. 4	13.50 to 13.75
Southern gray forge	13.00 to 13.25
Mottled	12.25 to 12.50
Southern No. 1 soft	14.25 to 14.50
Southern No. 2 soft	13.75 to 14.00
Standard southern car wheel	25.25 to 25.50
Northern No. 2 foundry	14.20 to 14.70
Northern No. 3 foundry	13.95 to 14.20
Northern No. 4 foundry	13.45 to 13.75
Jackson co. 8 per cent silicon	16.85 to 17.20

Coke.—The foundry coke market is strong and prices, while generally firm in some cases have been slightly advanced. A few contracts are reported to have been made for furnace coke in the Connellsville district on a basis of $2.25, ovens. Furnace coke is generally quoted at from $2.15 to $2.25. There are a number of good inquiries for foundry grades, which indicates that those melters, whose contracts expire on or around July 1, are beginning to buy for future requirements, and quite a large tonnage is expected to be placed during the present month. Some of the oven operators are making strenuous efforts to increase their output, but labor, apparently, is becoming more scarce from day to day. We quote from the leading coke producing districts as follows:

		Prompt shipment.	Contract second half.
Connellsville district:			
Foundry	coke	$2.50 to 2.75	$2.50 to 2.75
Furnace	coke	2.15 to 2.25	2.25
Wise county district:			
Foundry	coke	$2.50 to 2.75	$2.50 to 2.75
Furnace	coke	2.00 to 2.25	*Sliding scale basis
Pocahontas district:			
Foundry	coke	$2.50 to 2.90	$2.50 to 2.90
Furnace	coke	1.85 to 2.25	1.85 to 2.25
New river:			
Foundry	coke	$3.00 to 3.25	$3.00 to 3.25
Furnace	coke	2.35 to 2.50	2.35 to 2.50

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16 2-3 per cent of the amount over $9 which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material. — Specifications on steel bars and structurals have been fairly good during the past week, and some good tonnages have been booked.

Warehouse business is holding about the same, and prices are unchanged and fairly firm. Specifications seem to be general, which indicates that there is a general building movement here. We quote warehouse prices, f. o. b. Cincinnati, as follows:

Steel bars, 1.65c base; iron bars, 1.60c base; structurals, 1.75c base; plates, ¼ inch and over, 1.75c base; sheets, blue annealed No. 10, 1.95c base; rivets, cone head, 2.30c base; cold rolled shafting, 60 per cent discount; boiler tubes as follows: 1¾ to 2¼ inch, 60 per cent discount; 2½ inch, 62 per cent discount; 2¾ to 3¼ inch, 65 per cent discount; 3½ to 4½ inch, 67 per cent discount; and 5 to 6 inch, 60 per cent discount; soft steel coid twisted concrete bars, 60 per cent discount; soft steel cold twisted concrete bars, cut to length as follows: ¾ inch square and larger, 1.75c; ⅝ inch square and larger, 1.85c; ½ inch square and larger, 1.95c; 5-16 to ⅜ inch square and larger, 2.15c; ¼ inch square and larger, 2.25c.

Old Maetrial.—There is not much activity in the local scrap iron market and prices remain about the same.

Local foundries have not increased their melt to any extent during the past week or two, and do not seem inclined to pay the prices asked by dealers who are holding fairly firm. Railroad offerings last week were not as good as many of the dealers expected, and these transactions did not have any general effect upon quotations. We quote prices dealers will pay in Cincinnati and vicinity per gross and net tons, as follows:

Gross Tons

Old iron rails	$12.75 to 13.25
Old steel rerolling	11.50 to 12.00
Old iron axles	19.50 to 20.00
Heavy melting scrap	10.75 to 11.25
Car wheels	11.25 to 12.00
Bundled sheet scrap	9.00 to 9.50

Net Tons.

Old No. 1 R. R. wrought	$10.50 to 11.25
No. 1 machinery cast	10.25 to 11.00
No. 1 busheling	8.50 to 9.30
Stove plate	7.50 to 8.25
Machine shop turnings	7.00 to 7.50
Cast borings	7.00 to 7.50
Heavy turnings	7.25 to 7.75
Mixed cast	8.25 to 9.25

CLEVELAND

Heavy Ore Movement---Furnace Coke Prices Softer

Office of THE IRON TRADE REVIEW,
Penton Bldg., June 4.

Iron ore shipments during May were 5,919,074 gross tons as against 3,684,819 gross tons for May, 1911, an increase of 2,234,255 tons. April ore shipments were only 204,042 tons as against 331,645 tons for April, 1911, so that it becomes quite clear that shippers have determined upon very heavy movement of ore this season. The movement to June 1 totals 6,123,116 as against 4,016,464 tons for the corresponding period of last year, an increase of 2,106,652 tons. Shipments by ports were as follows:

Port.	May, 1911.	May, 1912.
Escanaba	436,008	712,359
Marquette	204.093	356,914
Ashland	226,528	513,484
Superior	1,239,153	1,931,307
Duluth	896,113	1,276,027
Two Harbors	682,924	1,128,983
	3,684.819	5,919,074
1912 increase		2,234,255

Port.	To June 1, 1911.	To June 1. 1912.
Escanaba	529,540	792.889
Marquette	218,931	356,914
Ashland	267,865	521,772
Superior	1,315,892	1.995.723
Duluth	947,155	1,294,264
Two Harbors	737,081	1,161.554
	4,016,464	6,123,116
1912 increase		2,106.652

The outlook is that the movement for June will make a new record for any month in the history of the ore trade. To do this it must ship more than 7,316,592 tons. There is still some selling of ore to furnaces which find they need more than they have contracted for. The tonnages being placed are not large.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $3.75; Mesabi Bessemer, $3.50; old range non-Bessemer, $3.05; Mesabi non-Bessemer, $2.85.

Pig Iron.—Although no large tonnages are being sold, there is a fair amount of buying by Cleveland foundries, and the recent advance in quotations to $13.50, furnace, is being maintained. We quote, delivered in Cleveland, as follows:

No. 1 foundry	$14.00
No. 2 foundry	13.50
No. 2 southern	15.35
Gray forge	13.00
Bessemer	15.15
Lake Superior charcoal	15.75
Jackson co. 8 per cent silvery	16.00

Coke.—During the past few days there has been a rather unexpected softening in furnace coke. One large interest has contracted for 2,500 tons per month for last half delivery at $2.15. Although it is claimed that this is not strictly standard Connellsville coke, little difficulty is being experienced in contracting at $2.25. Foundry coke is quiet and prices unchanged. We quote:

Connellsville furnace coke, $2.15 to $2.25 for prompt deilvery, and $2.25 on contract; Connellsville foundry coke, $2.60 to $2.75 for prompt, and $2.75 to $3.00 on contract.

Finisshed Material.—New business lags, but mills do not regret this at the present time, as they are far behind on deliveries on shapes and plates, while deliveries on bars range all the way from two weeks to ten weeks. The Toledo Ship Building Co. has taken a contract for a car ferry, which will require 2,000 tons of shapes and plates, which the Carnegie Steel Co. will furnish. Shafting has been advanced and quotations are now 65 off on carloads and 60 off on less than carloads, this being an advance of 2 points over former quotations. Numerous contracts for finished material will expire July 1, and the attitude of buyers toward contracts for periods beginning July 1 will be a good indication of the strength of the present market. Some consumers are already manifesting a desire to contract, but mills are very conservative about committing themselves.

Old Material.—Price steadiness is the feature of the Cleveland market, but shipments from outside points are not coming in as rapidly as desired. This is due to scarcity of labor, all yard owners both inside and outside the city complaining on this score. Dealers are holding onto their material and there appears to be little scrap to buy at this time, hence it would appear that prices must advance before dealers will let go their accumulations. Rolling mills are seeking shipments and steel consumers are also taking material as well as asking for more. We quote, gross tons, f. o. b. Cleveland, as follows:

Gross Tons.

Old iron rails	$15.00 to 15.50
Old steel rails (under 6 ft.)	13.00 to 13.50
Old steel rails (over 6 ft.)	13.25 to 13.75
Relaying rails	19.50 to 20.00
Old car wheels	13.00 to 13.50
Old steel boiler plate	13.00 to 10.50
Malleable iron (railroad)	12.50 to 13.00
Steel axles	17.00 to 17.50
Axle turnings	10.00 to 10.50
Malleable iron (agricultural)	10.00 to 10.50
Heavy steel	12.25 to 12.75
Country mixed steel	10.75 to 11.25
Bundled sheet scrap	10.00 to 10.50

Net Tons.

No. 1 R. R. wrought	$12.00 to 12.50
No. 1 busheling	11.00 to 11.50
No. 1 machine cast	11.00 to 11.50
No. 1 dealers' wrought	10.00 to 10.50
Machine shop turnings	7.75 to 8.00
Pipes and flues	9.50 to 10.00
Wrought drillings	7.75 to 8.00
Stove plate	9.50 to 10.00
Cast borings	7.75 to 8.00
Wrought iron piling plate	14.50 to 15.00
Wrought iron arch bars	14.00 to 14.50

Award Contracts for New Plate Capacity

Awards have been made of contracts for the construction of the building for a new light plate mill to be added to the plant of the Alan Wood Iron & Steel Co., at Ivy Rock, Pa., preliminary announcement of which was made several weeks ago. The building will be about 150 x 600 feet in dimensions and will house a three-high, 30 x 84-inch plate mill for rolling up to 72-inch widths. The mill will be automatically served and operated. The placing of the equipment contracts is now being done by Julian Kennedy, of Pittsburgh, the engineer of the extension.

NEW YORK

Less Activity in New Business

Office of THE IRON TRADE REVIEW, 1115 West Street Bldg., June 4.

Iron Ore.—Several charters covering about 20,000 tons have been made at 9s 6d from Spanish ports to Philadelphia to bring in Lucainena low phosphorus and Sagmenera ores against the recently reported sales to eastern Pennsylvania furnaces. The steamship Ganegocaita Mendi is afloat with 5,800 tons and charters have been closed for the Dora Baltea, 5,000 tons, the Wearwood, 6,000 tons, and the Montauk, 5,000 tons. No fresh selling of foreign ores has been done in the east. The leading Cuban shipper is now bringing in about 75,000 tons monthly and will shortly increase this to about 80,000 tons. It has been carrying large stocks at both the mines and on its docks in this country.

Pig Iron.—A slower movement prevails in pig iron in the New York and surrounding markets. Probably 10,000 tons of foundry iron and some small lots of malleable are pending, of which 6,000 to 7,000 tons are for New Jersey buyers. One Jersey consumer is in the market for 2,500 tons of No. 2X for last quarter, and another in the same district is still negotiating for 1,800 tons of No. 2X and No. 2 plain for third quarter. Another lot of 2,000 tons has been put quietly in the market. Two eastern malleable buyers are out for from 800 to 1,000 tons. Prices show much strength, despite some reports to the contrary. For Lehigh and Schuylkill valley grades, $14.75, furnace, or about $15.50, tidewater, is obtainable quite readily, although this level is occasionally shaded 25 cents or so on certain other eastern Pennsylvania brands. Though there has been some disposition lately in spots to shade $13.50, Buffalo, the market there is inclined toward higher prices. The makers quoting $14, furnace, for No. 2X, are being added to. One sale of 1,000 tons of No. 2X for last half delivery to this territory at $14, furnace, is noted this week. A Lehigh valley producer included in its recent sales about 5,000 tons of low grade iron to a Delaware river pipe maker at about $14.75, delivered. A large New York state melter recently closed for about 10,000 tons of standard forge for forward shipment, the business going to an up-state furnace. The Virginia market is stationary at $13, furnace. Production in that territory is at present confined to but four out of 17 furnaces. Total Virginia stocks are about 190,000 tons, the great portion of which is in the hands of the leading maker there. These stocks have lately shown a substantial decrease. The fourth furnace of the Lackawanna Iron & Steel Co., at Lebanon, Pa., may soon resume. Three stacks of this group are now operating. We quote at tidewater for prompt and third quarter shipment, as follows, southern and Virginia iron being given at New York docks:

Northern foundry No. 1	$15.50 to 15.75
No. 2X foundry	15.25 to 15.50
No. 2 plain	14.75 to 15.00
No. 2 Virginia	15.80 to 16.05
No. 2 southern foundry	15.00 to 15.25
Malleable	15.50 to 15.75
Gray forge	14.50 to 14.75

Ferro-Alloys.—Ferro-manganese for shipment this year continues of limited supply and sales of small lots in this market this week for last half shipment at $50 are noted. Spot carloads were sold in the week at $55, seaboard. German makers are now offering more freely to sell their material in competition with English ferro-manganese at $48.50, seaboard. The market shows only a scattering inquiry for forward delivery. Fifty per cent ferro-silicon shows increased firmness and some sellers are now not doing below $70, Pittsburgh, on large lots. We quote standard ferro-manganese at $48.50, seaboard, and for prompt shipment at $55 to $58, seaboard, and 50 per cent ferro-silicon at from $68 to $70, Pittsburgh.

Cast Iron Pipe.—New York City authorities will take bids June 10 on a contractor's letting of 750 tons of 10-inch pipe. This inquiry is believed to be the forerunner of heavy purchases by the metropolis during the next several months which will probably run into a very heavy tonnage. East Williston and Freeport, L. I., recently placed about 370 tons. The market shows a very favorable activity in new business, much of which is coming from the public utility companies. Prices are improving but the betterment is spotty. We quote six-inch pipe at from $21 to $22, f. o. b. New York, in carload lots, some makers asking up to $23.

Finished Material.—There is less activity in new business arising for attention from the mills, but the heavy tonnage taken during the more generous buying periods recently is carrying forward works operations without change. Steel making capacity in the east, as elsewhere, is quite fully occupied, and additions through operations are largely along the line of pig iron, as stocks of such metal are shrinking.

Prices are holding well. One of the leading eastern shape makers is quoting 1.30c, Pittsburgh or 1.46c, New York, on anything but the larger tonnages of standard sections. Plates show strength at 1.25c, Pittsburgh, or 1.41c, New York. Steel bars are strong. Bar iron is slightly easier. Billets are very firm and forging steel has sold in the east at $28 to $29, delivered. One New England buyer of billets is again in the market for 10,000 tons or more.

Some of the large building projects in the metropolis which have been in sight for many months are now approaching final action. It is understood that Terry & Tench are the low bidders for the erection of the steel work for the new Biltmore Hotel, 14,000 tons, and it is expected that the fabrication will be done by the American Bridge Co. Plans came out this week for the large Adams Express Co. building on lower Broadway, the steel requirements of which may reach 10,000 tons. Milliken Bros. have taken 3,200 tons for the Standard Meter Co. building, this city; Ravitch Bros., 700 tons for an apartment at 150th street and Riverside drive; Levering & Gerrigues, it is finally settled, will furnish 1,300 tons for the Chatham Realty Co. loft on West Thirty-fifth street; Phoenix Iron Works, 400 to 500 tons for a theatre in Brooklyn, for which the general contract was held by the T. A. Clarke Co.; the Lackawanna Steel Co., 750 tons, for the Glens Falls Fire Insurance Co. building, Glens Falls, New York, and McClintic - Marshall Construction Co., 250 tons, for a building for the Victor Talking Machine Co., Camden, N. J. Action is expected soon on the

H. J. Heinze warehouse in the Bronx, 800 to 1,000 tons. Revised plans are about to be issued for the Heublein Hotel, Hartford, Conn. F. T. Nesbit & Co. are expected to be the general contractors for the addition to the Murphy Hotel, Richmond, Va., 1,300 tons. The city bridge department will take bids June 20, on 1,000 to 1,200 tons for Manhattan terminal improvements to the Brooklyn bridge.

Railroad work is very moderate. The New Haven railroad is again taking figures on 5,000 to 6,000 tons for catenary bridges, which have been before the market on various occasions in the past. Its work is relatively small in this district. We quote, delivered at New York tidewater, as follows:

Plain structural shapes, 1.41c to 1.46c; tank plates, 1.41c to 1.46c; steel bars, 1.36c; common iron bars, 1.32c to 1.37c; steel bars from store, 1.80c; plates and shapes from store, 1.90c; extras as shown under Pittsburgh report.

Rails and Track Material.—Standard railroad spikes are firmer at 1.45c, Pittsburgh, for both prompt shipment and on contracts. A sale of 3,000 kegs to an eastern road for immediate shipment at 1.45c is noted. Some small lots are bringing 1.50c, Pittsburgh. The rail market is quieter.

Old Material.—Buying of scrap in the metropolitan market has settled down again to small lots, but there is a fair volume of business of this character current. Prices are a little easier in most grades. Eastern steel works are now paying about $13.50, delivered, for heavy steel and purchases by dealers at $11.20, New York, this week are noted. The Metropolitan Iron & Steel Co., this city, which is clearing its yards of material, at receiver's sale, disposed of 2,500 tons of No. 1 heavy melting steel this week at full prices. We quote gross tons, prices New York dealers will pay at tidewater, as follows:

Old car wheels	$11.25 to 11.75
Old iron axles	20.00 to 21.00
Steel axles	15.00 to 15.50
Old steel shafting	14.00 to 14.25
No. 1 heavy melting steel	11.00 to 11.25
No. 1 R. R. wrought	13.25 to 13.50
Wrought pipe	9.75 to 10.00
Cast borings	7.00 to 7.25
Machine shop turnings	8.00 to 8.25
Heavy cast	10.50 to 11.00
R. R. malleable	9.50 to 10.00
Stove plate	8.25 to 8.75
Grate bars	7.25 to 7.75

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City and $1.60 from New York; to Roebling, N. J.; $1.00 from Jersey City and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York; to Jersey City, $1.00 from New York; to Newark $1.10 from New York.

The Thomas Furnace Co., Milwaukee, Wis., has blown out its stack preparatory to erecting an ore unloading bridge on dock.

BIRMINGHAM

Inquiry for 10,000 Tons for Export Pending

Office of THE IRON TRADE REVIEW, Birmingham, Ala., June 4.

Pig Iron. — This market is very quiet, but with all parties concerned apparently content to await further developments. An inquiry for some 10,000 tons of analysis iron for export is pending, and 5,000 tons of foundry grades will probably be placed by a pipe manufacturer within the present week. The transactions of the past week involved prompt deliveries in the majority of cases, with the aggregate tonnage sold smaller than that of the week previous. The largest transaction in recent reports involved 1,000 tons of high silicon, high manganese iron, for third quarter shipment, which brought a higher price than $12 per net ton at furnace. For the small orders placed in the week, $11.25 per ton at Birmingham for No. 2 foundry was paid in a number of cases, where prompt delivery was required. Reports still indicate but a small tonnage already sold for the last quarter—one large producer reporting only 20,000 to 25,000 tons on order books where the delivery extends beyond the third quarter. Another concern sold during the month of May an aggregate of 20,000 tons for delivery in the third and fourth quarters at $11.25 to $11.50 per ton at Birmingham for No. 2 foundry. An estimate of current quotations for prompt shipment, and delivery in the third quarter, are as below, with an advance of 50c per ton quotable for deliveries in the last quarter:

For delivery prior to last quarter:	
No. 1 foundry	$11.50 to 11.75
No. 2 foundry	11.00 to 11.25
No. 3 foundry	10.50 to 10.75
No. 4 foundry	10.00 to 10.50
Gray forge	9.75 to 10.25
Mottled	9.50 to 10.00
Standard basic	10.75 to 11.25
Off basic	10.50 to 10.75
Standard charcoal	22.50 to 23.00

With the exception of charcoal iron, an advance of 25c to 50c per ton would be asked over the above figures for deliveries in the last quarter.

Cast Iron Pipe.—The prices being received for this market are higher than have ruled for some time past, and quotations are revised accordingly. The most significant tonnage now in sight is the requirement for laying some 65 miles of water main, which is soon to be advertised. This tonnage is to consist of 8-inch, 10-inch, 12-inch and 16-inch sizes, but the specifications are not yet in hand. Revised quotations on class "A", or water pipe, are as follows, per net ton, f. o. b. cars this district, viz.: 4-6-inch, $23.50; 8-12-inch, $22.50; over 12-inch, average $21.50, with $1 per ton extra for class "B" or gas pipe. Special fittings are quotable at $47.50 to $50 per net ton at foundry.

Old Material. — This market was fairly active in the past week, resulting in a very satisfactory movement of heavy scrap, and borings and turnings to the east. A ready market is found in the southern territory for light cast and machinery grades, while the local demand for wrought and steel grades is strong. We quote as follows, prices dealers are asking for their holdings, per gross ton, f. o. b. cars here, viz.:

Old iron axles (light)	$15.50 to 16.00
Old steel axles (light)	12.00 to 12.50
Old iron rails	12.00 to 12.50
No. 1 R. R. wrought	12.00 to 12.50
No. 2 R. R. wrought	10.50 to 11.00
No. 1 country	8.50 to 9.00
No. 2 country	6.50 to 7.00
No. 1 machinery	9.00 to 9.50
No. 1 steel	9.50 to 10.00
Tram car wheels	8.50 to 9.00
Standard car wheels	10.50 to 11.00
Light cast and stove plates	7.00 to 7.50

ST. LOUIS

Car Company Suffers from Material Shortage

Office of THE IRON TRADE REVIEW, St. Louis, June 4.

Pig Iron.—An inquiry is in the St. Louis market today for 1,000 tons of malleable Bessemer iron, for last half delivery, and another for 100 tons of southern No. 1 soft. Sales last week totaled about 1,000 tons, all in small lots, and mostly for quick shipment. Prices are firm at $11 to $11.50, Birmingham basis, for southern iron, and at $13.50, Ironton, and $14.50, Chicago, for northern iron. Our tabulated prices on southern iron, delivered, to which the Birmingham freight of $3.75 has been added, follow:

Southern No. 1	$15.25 to 15.75
Southern No. 2	14.75 to 15.25
Southern No. 3	14.25 to 14.75
Southern No. 4	13.75 to 14.25

Coke.—One sales agent reports that he closed a deal last week for 6,000 tons of foundry coke, but with this exception, business has been

dull. Prices are firm, however.

We quote 72-hour Connellsville foundry grades, $2.50 for immediate shipment or delivery through the year; 48-hour Connellsville furnace, $2 to $2.25; best 72-hour Virginia foundry, $2.50 to $2.75; 48-hour Virginia furnace, $2 to $2.25. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material.—The Kansas City, Mexico & Orient railroad is in the market for a large tonnage of steel rails and a southwestern road for 20,000 tons. Track fastenings are in good demand and deliveries have been extended. Orders have been good for structural material on contracts, and shipments have been hurried. Plates remain hard to get. Bar prices are unchanged, and the demand continues good. There is very little demand for light rails. Not much is being done in plates.

It is reported that one of the largest car manufacturing plants in the St. Louis territory will close its shops temporarily because of inability to get material. This will necessitate night and day work to catch up when the plant is reopened..

Old Material.—The Missouri Pacific railroad is in the market with a list of 3,000 tons, the Frisco with 900 tons, the Mobile & Ohio with 700 tons, the Kansas City Southern with 500, all of which dealers may bid upon before the close of the week. Relaying rails are in good demand, but inquiry for scrap generally is not brisk.

We quote the following prices which dealers are willing to pay, f. o. b. St. Louis.

Gross Tons

Old car wheels	$13.50 to 14.25
Old iron rails	15.25 to 15.50
Re-rolling rails (5 ft. and over)	13.25 to 13.75
Old steel rails (3 ft. and under)	12.25 to 13.25
Light section relayers (45 lb. and under) subject to inspec.	21.50 to 22.50
Re-laying rails, subject to inspec.	22.50 to 23.25
Frogs, switches and guards	10.50 to 11.25
Heavy melting steel	11.50 to 12.25
Shoveling steel	10.75 to 11.25

Net Tons

No. 1 railroad wrought	$11.50 to 12.00
No. 2 railroad wrought	10.50 to 11.00
Arch bars and transoms	14.25 to 14.50
Knuckles, couplers and springs	13.50 to 11.00
Shafting	14.00 to 14.50
Iron car axles	18.50 to 19.00
Steel car axles	16.00 to 16.50
Locomotive tires	11.50 to 12.00
No. 1 country wrought	9.25 to 9.75
Pipe and flues	8.50 to 9.00
Tank iron and cut boilers	7.50 to 8.00
No. 1 cut busheling	9.25 to 9.75
No. 2 cut busheling	6.25 to 6.75
Cast and mixed borings	6.25 to 6.50
Machine shop turnings	7.00 to 7.25
Railroad malleable	10.50 to 11.00
Agricultural, malleable	9.50 to 10.00
Stove plates	9.50 to 10.00
Angle splice bars (iron)	11.25 to 12.00
Angle splice bars (steel)	9.50 to 10.00

BRITISH MARKET

British Pig Iron Reflects Activity

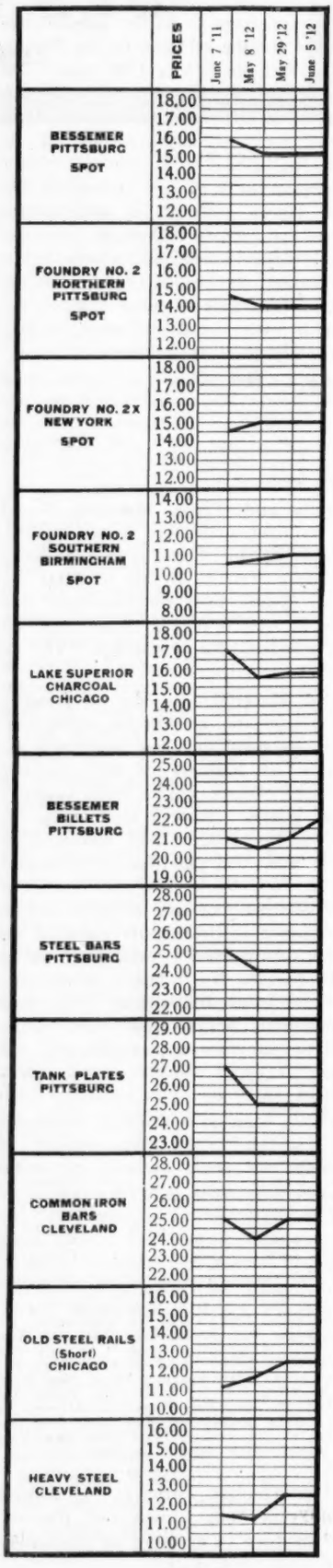
Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., May 25.

The excellent state of trade generally is fully reflected in the pig iron market. Prices are rather higher than a week ago, for most descriptions. The selling price of Cleveland No. 3 is 54s ($13.22) with 54s 6d three months ($13.34). The demand continues to make inroads upon the stores, which now stand at 350,000 tons. This means that there has been a decrease of 160,000 tons since the miners' strike. This month stocks have been decreased by 35,000 tons. In the northeast district there are now 83 furnaces in operation, or five more than before the miners' strike. The demand for hematite iron increases more rapidly than that for foundry, and more furnaces are being put on this class of material. Last week, a cargo of 2,500 tons of spiegel and ferro was sent from Middlesbrough to Baltimore, and this week over 4,000 tons were taken away in another boat. America is buying more heavily than for a long time past in this class of iron. The prospects all point in the direction of still higher prices for pig iron.

Finished Material.—Extraordinary activity is maintained throughout the iron and steel trades. The keenest demand at present is for steel billets, which are extremely scarce. Demand has greatly overtaken supply, and it is notorious that prices vary by as much as 10s per ton. This is largely due to the failure of foreign supplies. Many British consumers have learned to depend upon Belgian billets and the supply of these has lately broken down rather badly, so that buyers have been obliged to go to British houses, and have paid as much as £6 10s per ton.

The report from America, conveyed in THE IRON TRADE REVIEW cablegram, that billets were scarce, so that the Steel Corporation was compelled to buy large quantities caused a great impression on the Birmingham market, and confirmed the feeling that America is not to be looked to as a source of supply for raw steel.

PRICE CHART



BUFFALO

Pig Sales Lighter, But Prices Firm

Office of THE IRON TRADE REVIEW,
Buffalo, June 4.

Pig Iron.—Both the volume of sales and inquiries were lighter during the past week than they were during the previous one, due partially to the holiday which cut off one day's trading. The sales amounted to from 10,000 to 15,000 tons in foundry grades, malleable and basic. In the Buffalo district, there are practically no stocks being carried, the majority of the furnaces loading and shipping their production as fast as made. There are several stacks out of blast, but no increase in the production of the furnace interests is expected unless prices improve. The range for the week, f. o. b. furnaces, is substantially as follows:

No. 1X foundry	$14.00 to 14.50
No. 2X foundry	13.75 to 14.25
No. 2 plain	13.50 to 14.00
No. 3 foundry	13.50 to 13.75
Gray forge	13.25 to 13.75
Malleable	14.25 to 14.50
Basic	14.25 to 14.50
Charcoal	15.50 to 16.00

Finished Material.—The mills of the district report that inquiries were lighter during the past week than a week ago. Prices, however, are held firm by all interests and the monthly quota rule is being enforced upon tonnage under contract. The month of May in wire nails and wire products developed a considerable tonnage of sales, followed by satisfactory specifying. Prices are held firmly at 1.40c, base, on wire products and 1.60c, base, on wire nails, with the indications of a further advance.

The American Bridge Co. secured the contracts for the bascule bridge of the Buffalo Creek railway, across the city ship canal, requiring about 500 tons, and the bascule bridge of the Buffalo Creek railway across the Buffalo river, requiring about 1,400 tons.

Old Material.—The local sales have improved in the past week, although the tonnage was in small lots. More outside buyers came into the market, principally for heavy melting steel. This improvement in transactions has stiffened prices, but not enough so to cause any changes in the schedule quoted last week. The range, per gross ton, f. o. b. Buffalo, is as follows:

Heavy melting steel	$12.75 to 13.25
No. 1 railroad wrought scrap	14.00 to 14.75
No. 1 R. R. and mch. cast scrap	13.50 to 14.00
Old steel axles	16.50 to 17.25
Iron axles	21.00 to 22.00
Car wheels	12.50 to 13.00
Railroad malleable, scrap	11.50 to 12.25
Wr'ght iron and soft steel turn.	8.00 to 8.50
Cast iron borings	7.00 to 7.50
Low phosphorus steel scrap	15.75 to 16.00
Old iron rail	15.00 to 15.50
Tank iron	10.00 to 10.25
Boiler plate, sheared	13.75 to 14.25
Pipe and tank	9.50 to 10.00
Stove plate	9.75 to 10.00
Sheet iron	7.00 to 7.50
Locomotive grate bars	11.00 to 11.25

METAL MARKETS

Tin Prices Cover Wide Range---Copper Rises

New York

June 4.

Tin.—The prices of spot and future standard tin in London covered a wide range the past week, and wound up today with a net loss of £13 5s in spot and £6 in futures at £200 15s and £196, respectively. While the daily developments in the labor situation abroad are said to have been the cause of the erratic movements, manipulation unquestionably played an important part. The European and United States monthly tin statistics proved to be a close realization of early estimates, showing an increase of 2,452 tons in total visible supply, May 31. Due to the fact that the Banca auction took place near the end of May, almost all of the 2,700 tons disposed of were carried forward into the surplus stocks, and will appear in deliveries for June. Deliveries into domestic consumption were large, amounting to 4,250 tons. Arrivals aggregated only 3,190 tons for the month and consequently stocks here, including on dock and landing, declined 1,060 tons to 2,005 tons. A large business has been done in the local market between dealers, but consumers have bought sparingly. Spot Straits sold slightly above 47c early in the week, and has since followed the London fluctuations to the lower level. The market closed today at 45.75c. Arrivals since June 1 aggregate 255 tons, and there are 990 tons afloat.

Copper.—Three successive advances in the price of electrolytic copper during the past week have brought the metal to a 17.25c level among the leading sellers. Some interests are bidding for business at 17.12½c, however, and taking actual sales as a basis for the market, that is, the prevailing price today for both electrolytic and lake. Casting is 17c to 17.12½c. There has been a good steady demand for all three grades from domestic consumers, and a substantial volume of foreign business also. It is the general trade opinion that unless restraining action is taken by the leading producers the metal will soon be selling considerably higher, and probably have a harmful effect on the present satisfactory trade conditions. A further reduction in surplus copper is anticipated when the forthcoming producers' statement is published.

Exports during May totaled 32,584 tons. Since June 1, 2,759 tons have been shipped abroad.

Antimony.—The market continues quiet at unchanged prices. Cookson's is 8c, Hallett's is 7.75c, and Hungarian is 7c.

Chicago

June 3.

New Metals.—Copper continues to advance and the market is active in all departments. Spelter is now quoted 6.80c, Chicago, which is $1 above the prices prevailing a week ago. Lead is also somewhat stronger. Buyers seem anxious to cover for their June requirements.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 16⅝c; casting, 16½c; smaller lots, ¼c to ¾c higher. Spelter, car lots, 6.80c; lead, desilverized, 4.15c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, 8.65c, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 46c; Cookson's antimony, 8½c; other grades, 7½c to 8c.

Old Metals.—The old metal market is somewhat firmer and prices in some instances are a shade better, but otherwise the situation is unchanged.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Copper wire, crucible shapes, 14¾c; copper bottoms, 13¼c; heavy cut crucible copper, 14¾c; heavy red brass, 12½c; heavy yellow brass, 10c; No. 1 red brass borings, 11c; No. 1 yellow brass borings, 9c; brass clippings, 9¼c; lead pipe, 3½c; zinc scrap, 5⅛c; tea lead, 4c; No. 1 aluminum, 12½c; No. 1 pewter, 28c; block tin pipe, 41c; tin foil, 35c; linotype dross, 3¼c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; prime slab zinc dross, $90 a ton.

May Pig Iron Output Largest In Over Two Years

Daily Average Production Over 80,000 Tons for First Time Since April 1910—More Stacks In Blast

The production of coke and anthracite pig iron in the country in May was the highest in 26 months, exceeding March, which had previously been the banner month for 1912, by 70,000 tons, but falling 107,000 tons short of the record for March, 1910. The total output in May was 2,481,803 tons, compared with 2,377,621 tons in April. The daily average production was the highest since April, 1910, when the output averaged 82,590 tons daily. The average in May was 80,058 tons, an increase of 804 tons over April. The total production was 104,182 tons higher than in April, last month having one more working day.

AVERAGE DAILY PRODUCTION.

	1912.	1911.
January	66,220	58,989
February	72,372	63,617
March	77,791	69,863
April	79.254	68.163
May	80,058	60,367
June	.....	59,109
July	.....	57,294
August	.....	61,995
September	.....	65,797
October	.....	67,486
November	.....	66,637
December	.....	65,558

By far the larger share in the increased production was made by the steel works, or non-merchant furnaces. These furnaces produced 1,909,367 tons in May, against 1,834,176 tons in April, an increase of 75,191 tons. The total merchant iron produced in May was 557,051 tons, compared with 529,259 tons in April, or a gain of 27,792 tons.

The number of stacks active on the last day of May was 242, against 239 on the last day of April, making a net gain in the active list in May of three. The gain was made entirely by the merchant stacks, eight of which were relighted, while three blew out, making a net gain of five. Of the steel works, or non-merchant stacks in May, two were relighted and four blew out, making a net loss of two for the steel works furnaces for the month. In all, ten stacks were relighted in May and seven were blown out.

MONTHLY PRODUCTION.

	1912.	1911.	1910.
January	2,052,806	1,766,658	2,599,995
February	2,098,796	1,781,285	2,429,525
March	2,411,529	2,165,764	2,588,736
April	2,377,621	2,044,904	2,477,700
May	2,481,803	1,871,388	2,374,802
June	.....	1,773,282	2,288,279
July	.....	1,776,108	2,158,124
August	.....	1,921,832	2,103,792
September	.....	1,973,918	2,048,461
October	.....	2,092,061	2,086,205
November	.....	1,999,100	1,910,385
December	.....	2,032,301	1,779,899
Total	11,422,555	23,198,601	26,845,904

The production of spiegel in May was 4,606 tons, against 3,179 tons in April, a net gain of 1,427 tons in May. The total output of ferro was 10,779, compared with 11,007 tons in April, making a net loss of 228 tons in May.

The Zenith Furnace Co., Duluth, Minn., will relight its stack next week. It was blown out in October, last year, and about $50,000 has been spent in repairs, including relining.

MAY PIG IRON.

States.	No. of stacks.	No. in blast last day of month. May.	April.	Total tonnage made. Merchant.	Non-Merchant.	——Totals.—— May.	April.
Pennsylvania	157	103	101	157,810	890,207	1,048,017	1,015,052
Ohio	70	50	52	130,059	439,854	569,913	571,945
Alabama	45	18	18	101,061	50,334	151,395	151,590
Virginia	24	5	4	17,207	.....	17,207	14,152
New York	28	18	17	74,557	106,832	181,389	156,335
New Jersey	7	..	..	.....	.....	.....	.....
Illinois	26	20	19	23,385	242,918	266,303	230,673
Colorado	6	3	3				
Indiana	10	10	9				
Maryland	4	2	2				
Wisconsin	6	2	4	20,676	160,049	180,725	176,963
Kentucky	7	1	1				
West Virginia	4	2	2				
Tennessee	18	7	6				
Washington	1	.	.	22,996	19,473	42,469	37,725
Georgia	2	.	.				
Texas	3	.	.				
Minnesota	1	.	.				
Michigan	3	1	1				
Missouri	1	.	.	9,300	.....	9,300	9,300
Spiegel—All states.						4,606	3,179
Ferro—All states...						10,779	11,007
Totals	423	242	239	557,051	1,909,367	2,481,803	2,377,621

Blast Furnace Notes

No. 2 stack of the Woodward Iron Co., Woodward, Ala., was blown out May 18. No. 1 stack was lighted on May 21.

Gary No. 6 of the Illinois Steel Co., at Gary, Ind., was blown in on May 28, all of the eight stacks at that plant being now in blast.

Stack D of the Iroquois Iron Co., South Chicago, Ill., was lighted May 13.

The Lackawanna Steel Co., Buffalo, N. Y., lighted its No. 6 stack on May 12, placing six of its seven Buffalo stacks in active operation.

Mattie stack of the Girard Iron Co., Girard, O., was blown out May 4.

The Globe Iron Co., Jackson, O., blew out its furnace on May 31, for remodeling and enlarging. It will not be in operation again this year.

Adrian stack of the Adrian Furnace Co., Dubois, Pa., was lighted May 3.

The Clinton Iron & Steel Co., Pittsburgh, Pa., lighted its Clinton stack on May 20.

Colonial stack of the Colonial Iron Co., Riddlesburg, Pa., was put in blast on May 1.

No. 3 stack of the Shenango Furnace Co., Pittsburgh, Pa., was lighted May 20.

Stack A of the Warwick Iron & Steel Co., Pottstown, Pa., was blown in on May 20.

Worth Bros., Coatesville, Pa., blew out their No. 1 furnace on May 18, neither of their stacks being active on the last day of the month.

The stack of the Pulaski Iron Co., at Pulaski, Va., was relighted on May 7.

Stack A of the Northwestern Iron Co., Mayville, Wis., was blown out on May 11.

The Thomas Furnace Co., Milwaukee, Wis., has blown out its stack preparatory to erecting an ore unloading bridge on dock.

The Pennsylvania Steel Co. has issued orders to start No. 3 Steelton furnace on June 10. The stack has been idle for about a year. No. 1 furnace, which has been idle since December, 1910, will also be started.

The Central Iron & Steel Co. receivers will start Paxton No. 2 stack this summer. It has been idle for more than two years.

RATE HELD REASONABLE

Commerce Commission Denies Claim of Portsmouth Steel Co.

The Interstate Commerce Commission has dismissed a complaint of the Portsmouth Steel Co., of Portsmouth, O., against the Baltimore & Ohio railroad, the industrial concern charging that the rate on 41 cars of limestone from Martinsburg, Pa., to Portsmouth was unjustly discriminatory and unreasonable. Reparation was asked.

The shipments in controversy moved between Nov. 3 and Dec. 22, 1910. When the complainant decided to make shipments of limestone from Martinsburg it learned that the rate was $2.53 per ton of 2,000 pounds, and asked the defendants, in view of the large number of shipments that were in contemplation, that the rate be reduced to $1.75 per ton. On Nov. 22, 1910, the defendants filed a tariff, naming a rate of $1.85 per ton of 2,240 pounds, which became effective on Dec. 23, 1910. On Nov. 25, 1910, the complainant requested the defendants to join in an application to the commission to authorize reparation for the difference between the rates of $2.53 and $1.85 on all shipments moving prior to the effective date of the lower rate. The defendants refused to join in such an application, asserting that the rate of $2.53 was not unreasonable; and the complaint herein was thereupon filed.

Amount of Reparation

The charges collected on the 41 shipments amount to $4,788.55, and the complainant asks reparation for the difference between that amount and the amount which would have accrued at the rate of $1.85 per gross ton, or $1,656.62.

The complaint alleged that the rate of $2.53 per ton was unreasonable as compared with the defendant Baltimore & Ohio Railroad Co.'s rates of 65 cents per gross ton from Martinsburg to Munhall, Pa., a point near Pittsburgh, a distance of 221 miles, and $1.40 per gross ton to Cleveland, 389 miles.

The defendants denied that the original rate was unreasonable considering the haul over the Alleghenies to Portsmouth, and explained that the reduction was made to induce a greater movement of traffic. Testimony was also adduced for defendants to show that the cars that are used to carry the limestone to Portsmouth must nearly all be returned empty 227 miles to Grafton, W. Va., the point of diversion to the Fairmont coal field, their natural loading point, before an east-bound load can be found, whereas there is generally a return load for every car that goes into the Pittsburgh district.

The Interstate Commerce Commission held the record clearly indicated that the reduction in the rate was voluntarily made by defendants for the sole purpose of stimulating movement.

ALABAMA CONSOLIDATED

Petition Will Come Up for a Hearing Set for June 12.

Hearing on a petition filed in the United States District Court in Baltimore by representatives of the Alabama Consolidated Coal & Iron Co., which resulted in Judge Rose issuing a restraining order against the Baltimore Trust Co., preventing the latter from selling bonds amounting to $1,250,000, given by the Coal & Iron Co. as collateral to secure three notes aggregating $330,000, will take place June 12. The Alabama Consolidated Coal & Iron Co. is a New Jersey corporation, and Joseph H. Hoadley, the joint complainant, is chairman of the board of directors, and is the holder of practically all the common stock. It is alleged that a conversion by which holders of preferred stock amounting to $1,200,000 (which was 50 per cent of all the preferred stock outstanding) exchanged their preferred stock for an equal amount of bonds, of which $510,000 worth was sold, was contrary to the laws of New Jersey. It is claimed that this conversion likewise raised the annual interest charge from $29,400 to $62,500. These bonds, it is alleged, were illegally issued and are now outstanding contrary to the laws of New Jersey.

Stock Issue Subscribed

Pittsburgh, June 3.—Announcement is made that the special right given to stockholders of the Pittsburgh Steel Co. to subscribe to the $3,500,000 of new preferred stock, expired on May 31. A large amount has been subscribed for by the stockholders and the remainder has been sold by the underwriters, so that the new issue was entirely disposed of.

Two hundred and fifty thousand tons of ore have been contracted for to be shipped from Ashland, Wis., this season, to Canadian ports. This is said to be more than twice as much as has ever gone to Canada from this port in any previous season. The ore trade from Lake Superior is still hampered by the grain trade from Fort William and Duluth.

PITTSBURGH FOUNDRYMEN

Elect Officers and Listen to Paper on "Brass Mixtures."

The annual meeting of the Pittsburgh Foundrymen's Association was held on Monday, June 3, at which officers for the ensuing year were elected. Reports of the officers presented indicated that the association had passed a very satisfactory year. It also showed the membership of the association was steadily growing larger. The meeting was the last to be held until September, as the July and August meetings were called off, owing to the hot weather and the usual summer indisposition of members to attend the gatherings.

The new officers elected include: President, W. A. Bole, of the Westinghouse Machine Co.; vice president, H. W. Petty, of the American Steel Foundries; treasurer, William J. Brant; secretary, F. H. Zimmers, of the Union Foundry & Machine Co.; executive committee, H. N. Wilson, of Taylor-Wilson Co.; George K. Knotts, United Engineering & Foundry Co.; John A. Logan; James R. Darragh, of Rogers, Brown & Co., and W. J. Phillips, of Phillips & McLaren. The ticket was identical with the one recommended by the nominating committee with the exception of the substitution of John A. Logan for the name of John A. Lathwood, who declined to serve on the executive committee on account of pressure of business.

The paper of the evening was presented by William H. Wood, foreman of the Pennsylvania Lines, brass shop on the Northside, Pittsburgh, who discussed in an informal manner, "Brass Mixtures".

Spanish Ore Trade

There are very heavy imports of foreign iron ore into Middlesbrough, no less than 12,112 tons being received on Monday, and the stocks at the works are heavy, but further buying is conspicuous by its absence. The merchants continue to ask 21s 6d per ton delivered here for rubio ore, and 22s 6d is quoted for 1913 delivery, but no new transactions fall to be noted, and the price may be considered nominal. Merchants say that lower prices can hardly be accepted, seeing that rates of freight are going up again, the last figure for Middlesbrough from Bilbao being 5s 7½d per ton.—*Iron and Coal Trades Review, London.*

The Baltimore & Ohio has placed 10 all-steel postal cars in service on through express cars. The equipment is a part of the order placed recently with the Pullman Co.

EXTENSIVE PLANS

For Edgar Thomson Works of Carnegie Steel Co.

A detailed statement of plans for extensions and improvements to the Edgar Thomson rail mills of the Carnegie Steel Co. has been given out, showing that this plant is soon to occupy a commanding position as maker of both Bessemer and open-hearth rails. The plans involve an expenditure of from $7,500,000 to $8,000,000.

At present, there are three rail mills at Edgar Thomson, these being Nos. 1, 2 and 3, No. 1 running on standard sections, No. 2 has been on sheet bars for some time, while No. 3 has been rolling light rails. No. 2 is the original rail mill at Edgar Thomson, having been built in 1872-73, and this mill will be torn out, the present No. 1 mill becoming No. 2, while a new No. 1 mill will be built for rolling standard sections. A new and enlarged and thoroughly modern shipping and storage yard will be supplied to take care of the increased output of the plant. The present blooming mill will be re-set and will be supplemented by two stands of rolls of four passes. This will naturally require new soaking pit furnaces, and it is the intention to throw the old one out and build entirely new and sufficient furnaces to take care of the Bessemer and open-hearth capacity.

The present Bessemer converting mill which contains four 12-ton converters will not be disturbed, but the supply of steel will be increased by the erection of 14 60-ton open hearth furnaces. At present there are 11 blast furnaces at the Edgar Thomson plant, making about 135,000 tons of pig iron per month, which will supply the present Bessemer rail plant and the new open hearth plant with all the metal both plants will need. The new open hearth works will have a monthly capacity of about 55,000 tons of ingots, and the present Bessemer capacity is 80,000 tons per month, making the combined capacity in Bessemer and open hearth steel for the new and enlarged Edgar Thomson works 135,000 tons per month. The storage yards will be highly organized and will contain complete crane equipment, electric lifting cranes, depressed tracks and other new and most modern equipment. These new storage yards will occupy the site of the present yards and as much and possibly more additional space. The open hearth plant and the soaking pits will be erected by the Carnegie Steel Co. itself, while the new rail mill and the additional stands for the blooming mill will be placed outside.

In 1910, a splice bar mill was added to the Edgar Thomson plant, and it has a capacity of about 7,500 tons per month. These extensive improvements will be started as soon as possible and pushed rapidly to completion. When all the proposed work is finished up, the new Edgar Thomson rail mills will have a daily capacity of about 4,000 tons of Bessemer and open hearth rails, making the plant the largest producer of rails in the country.

Pig Iron Prices Firm

Pittsburgh, June 5. (By wire.)—An effort was made today to place 6,000 tons of malleable pig iron for last half at $13.00, but this was rejected by the furnace operators, who are now holding firm to $13.25. An offer to purchase 10,000 tons of basic last week at $12.85 made to an Ohio furnace was promptly rejected and that furnace is now holding to $13.25 for what it has. Foundry iron is much more active. This week the inquiries for foundry grades are much larger and the price has firmed up to $13.50 valley.

To Investigate Strike

The strike at the plant of the Aluminum Castings Co., of Manitowoc, Wis., will be investigated by National President Valentine, of the iron molders' union, who will go to Manitowoc for that purpose. The striking laborers have refused to return to work in a body, although many are in favor of calling off the strike. The labor heads say that the matter is in the hands of the national officers.

Foreign Rail Sales

Beyond a few scattered inquiries for small lots, there is no fresh rail business in sight, says the *Ironmonger*. Makers, however, have raised their quotation to £6 7s 6d, f. o. b., for heavy sections.

The Louisville & Nashville railroad is in the market for about 8,000 tons of bridge material, part of which will be used to reconstruct the L. & N. bridge at Cincinnati. It is proposed to double-track the bridge at that place in order to handle the large coal traffic that is sent through Cincinnati from the eastern Kentucky fields.

The North Works of the Carnegie Steel Co., Sharon, Pa., has gone on double turn. The increase is due to the large number of orders for skelp and tin bar.

KNOCK OUT LAW

Circuit Court Judges Give Important Labor Decision.

Cincinnati, June 4.—The state law describing as a misdemeanor discharging a workman because of membership in a labor union, was declared unconstitutional by the circuit court here today, Judges Smith and Swing subscribing to the opinion, but Judge Jones dissenting. The decision came about through suit for a writ of habeus corpus for Sol Berger, foreman in a shoe factory, who was the cause of discharging a union workman because of connection with a strike of inseamers. The law has been on the statute books for 20 years.

Stockholders to Meet

Stockholders of the McMyler Interstate Co. will hold a meeting next Wednesday at the office of the company at Bedford, O., for the purpose of considering the adoption of a proposed agreement for the sale of the entire property and assets of the McMyler Interstate Co. A new corporation, to be known as the McMyler Interstate Mfg. Co., of Cleveland, has been incorporated at Columbus, O., with a capital of $5,000, the following incorporators being noted: E. R. Fancher, John H. Watson Jr., B. E. Robertson, L. M. Henders and W. D. Turner. The object of the new incorporation, as stated in its articles, is for the manufacture of structural iron and steel, bridges and bridge materials, castings, engines, boilers, etc.

Will Redeem Bond Issue

Pittsburgh, June 4.—The Jamison Coal & Coke Co. has issued a notice of intention to redeem its entire issue of 5 per cent serial gold bonds to the amount of $1,754,000 at par and a premium of 2½ per cent accrued interest on July 1, and further announcing that interest on these bonds will cease on July 1. The bonds are to be redeemed by the Union Trust Co., of Pittsburgh, as trustee.

Beginning with an increased force, all the mines of the Reading Coal & Iron Co. have resumed operations for the first time since the suspension on April 1. The Fiber Barrel Machinery & Mfg. Co., Pittsburgh, has increased its capital from $150,000 to $250,000.

The Galena Iron Works, Galena, Ill., is building a mill at the Lawrence mine in Wisconsin.

Helping the Workingmen to Help Themselves

How the Cambria Steel Co. Aids in the Development and Maintenance of Institutions for the Benefit of Its Employes

TO AID in the development and maintenance of institutions for the benefit of its employes, but to have them share a part of the burden to stimulate interest in their various organizations, is the basis upon which the welfare work of the Cambria Steel Co., Johnstown, Pa., is founded. The end sought and, as the records show, successfully achieved, is to help the workingman without creating in him a spirit of dependence. Not guided by precedent, as Cambria is the pioneer in this field of endeavor among iron and steel-making corporations, the various employes' associations were organized many years ago along untried lines. That they are in existence today and have enjoyed a growth which measures up to the tremendous development of the Cambria works is ample proof of the sound principles underlying their foundation. Notwithstanding the company's continued large contributions toward the support of these organizations, the members are in control of their association affairs and select their executives from those actively enrolled. A feeling of paternalism, which might otherwise be engendered, is thereby entirely avoided. The work is far-reaching in its extent and encompasses educational and social features, sickness and death benefits, as well as pensions to old and disabled employes. Wherever Cambria comes in contact with its employes — at the furnaces, in the mills, in the mines, or in their homes — the humanitarian spirit prevails. For more than 20 years the company has sought to reduce the number and severity of accidents among its employes by the installation of safety devices and more than 40 years ago the Cambria Library Association began its educational work among the workingmen of Johnstown. Cambria likewise enjoys the distinction of being the first ironmaking corporation in the United States to establish a hospital for its employes.

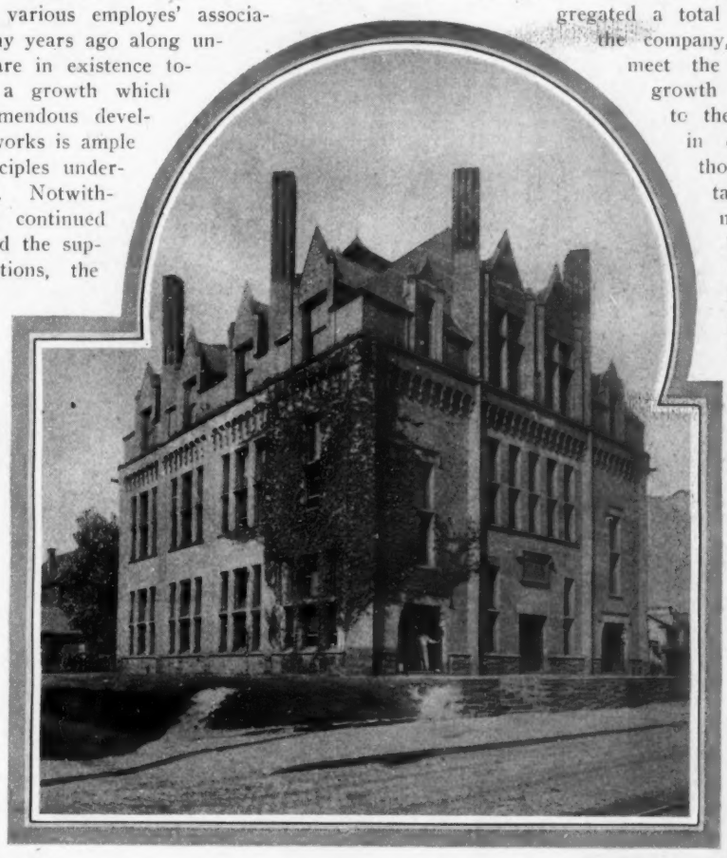


FIG. 1—THE CAMBRIA LIBRARY

In 1883, the Cambria Mutual Benefit Association was organized, shortly after the pioneer Cambria Mills relief fund became inoperative. This benefit organization enjoys the same distinction of priority among industrial workers as the Cambria hospital does among similar institutions. The Mutual Benefit Association, the pension fund and the hospital are closely allied and are maintained jointly by the company and its employes. From the time of its organization, the Cambria Steel Co. has contributed $1 a year for each member toward the support of the benefit association. In addition to this pro rata payment, the Cambria company has contributed a large sum in salaries for surgeons, clerk hire and incidental purposes. At the time of the organization of the association, Cambria guaranteed the payment of all benefits to the members and the value of this guarantee was well illustrated after the explosion in the Rolling Mill mine in 1902, on which occasion $77,000 was advanced to the association, as the disbursement for death benefits aggregated a total of $112,000. In addition, the company, as occasion required to meet the demands due to the growth of the works, has added to the hospital buildings, which in convenience, comfort and thoroughness of sanitary detail are unsurpassed. The monthly dues of the members is 90 cents, for which they receive the following benefits: Weekly payments for accident or sickness, $5; burial fee for natural death, $100; accidental death benefit, $1,000; loss of one hand or foot, $500; loss of both hands or both feet, $1,000; loss of one eye, $200; loss of both eyes, $1,000; loss of a thumb, fingers, or a part of a foot, according to the extent of permanent injury, $100 to $250. Since its organization, the association has disbursed a total of nearly $3,000,000. The first Cambria hospital, erected in 1887, contained beds for 12 patients, but the present capacity of the institution is 50 beds. During 1911, 445 patients were admitted for treatment and 5,884 were treated in the dispensary department. The decline in the number of accidents recently noted is attributed not alone to the many safety devices installed, but must be credited largely to the education of the employes along the lines of accident prevention. Two automobile ambulances are maintained, one for minor and the other for major accidents. In addition, stretchers, bandages, cotton, etc., are located at convenient points throughout the plant so that the injured may be made as comfortable as possible pending the arrival of the ambulance. Members of the benefit association having families or other persons dependent upon them receive treatment in the hospital free of charge and their weekly

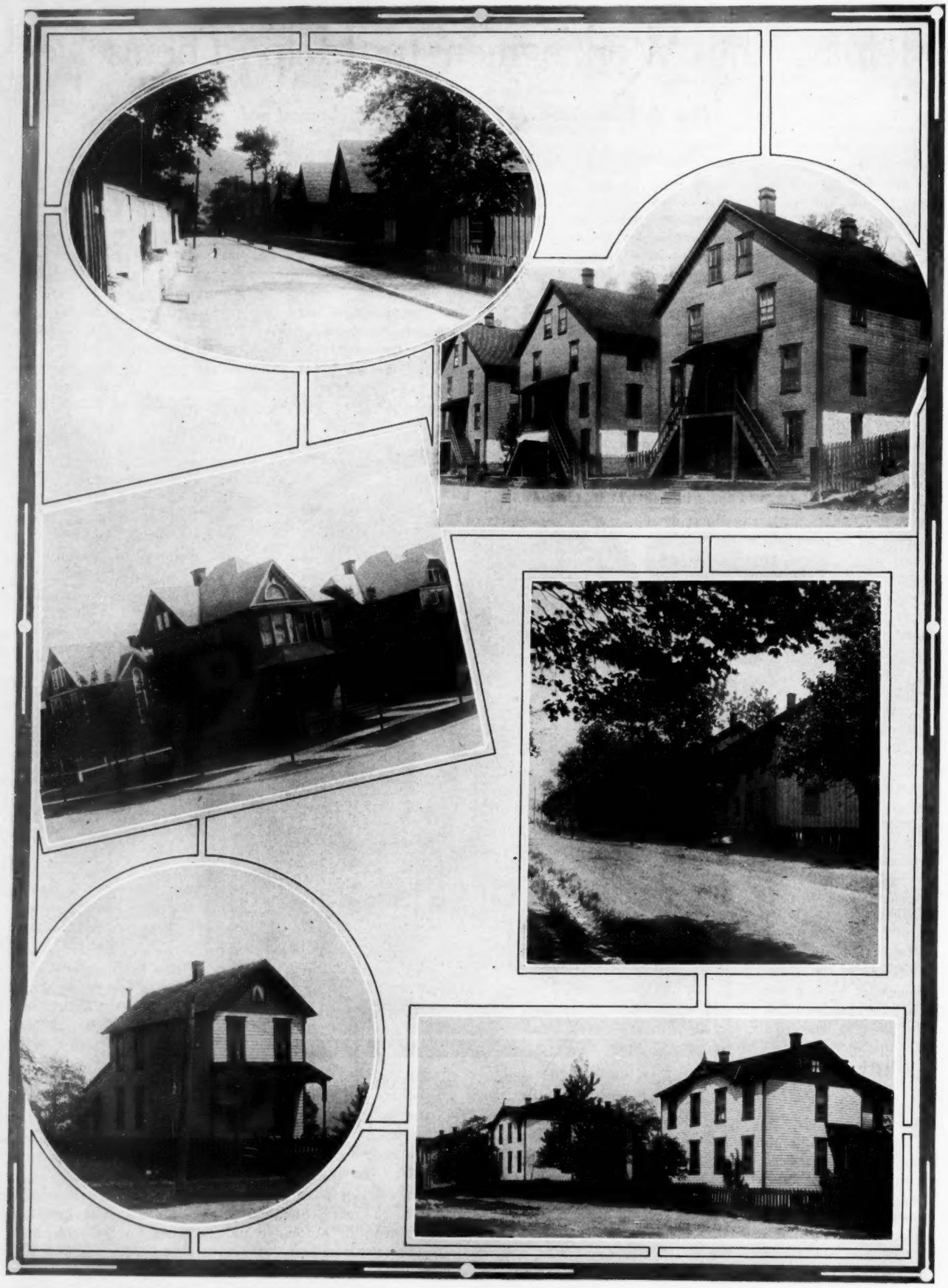


FIG. 2—TWO-STORY DOUBLE HOUSES; RENTAL EACH SIDE, $5.40 A MONTH

FIG. 3—EACH SIDE OF DOUBLE HOUSES RENTS FOR $8.50 A MONTH

FIG. 4—MODERN 7-ROOM HOUSE WHICH RENTS FOR $20 A MONTH

FIG. 5—DOUBLE HOUSES; EACH SIDE RENTS FOR $6 A MONTH

FIG. 6—SINGLE HOUSE WHICH RENTS FOR $7 A MONTH

FIG. 7—EACH SIDE OF THESE DOUBLE HOUSES RENTS FOR $8 A MONTH

benefits are paid to their dependents. The weekly benefits of members without families or other dependent relatives are paid to the hospital during their term at this institution. Those not members of the association, private cases, and employes of outside corporations are charged at the rate of $6 to $7 a week.

Early in 1910, the Cambria Mutual Benefit Association decided to establish a pension fund, 10 cents being collected monthly from each member for this purpose. The fund provides for service and disability pensions, the former being available to those employes who have served practically continuously for 30 years and have reached the age of 70. The permanent disability pension is paid to members totally disabled through injury sustained at work, or on the way to or from their place of employment. Pensions are paid at the rate of $20 a month and 62 persons were enjoying these payments at the close of 1911. The collections in that year amounted to $29,257.03 and the payments totaled $13,700.

Although the Cambria Steel Co. owns and rents to its employes a large number of dwellings, in which 434 families reside, the policy of the *company house* has never been fostered and every inducement is offered to the workingmen in its plants to become home owners. These houses, which rent for as low as $2.25 per month, net the company barely 6 per cent on the investment. The Cambria Iron Co., predecessor of the Cambria Steel Co., was compelled to provide houses for its employes many years ago, in Johnstown and its environs, owing to the inadequate housing facilities available at that time. Dwellings for more than one family no longer are erected, and the older houses are maintained in a good state of repair and all have been provided with modern sanitary arrangements. It is doubtful if in any other industrial community, houses can be obtained at so low a rental as those leased by the Cambria Steel Co., and the fact that there are no less than 228 applications for houses at the present time, is indicative of the desirability of these dwellings. The houses are in charge of the superintendent of lands and dwellings of the company's real estate department, and at frequent intervals, unknown to the lessees, the homes are inspected. Several months ago an experienced but disinterested investigator made a careful survey of conditions as they exist in this great iron and steel community, particularly with reference to the houses owned by the company. A summary of the report of this investigation follows:

"Nowhere were objectionable conditions found to exist, to an extent indicating anything but a desire and effort by the company to give the tenant the best possible house that was practicable."

In comparing conditions in Johnstown with those of Pittsburgh and New York, this investigator reported the following:

"There were, however, several serious conditions existing among the tenements in both Pittsburgh and New York that were reported in detail and with emphasis. Some of these might have been expected to exist among your houses. A partial list follows: Poorly ventilated sleeping rooms, dark sleeping rooms, cellar sleeping rooms, privy vaults in close proximity to dwellings, a privy vault or water closet used by several families, unsanitary sink arrangements, over-crowded sleeping rooms, inadequate number of water spigots requiring tenants to carry water a considerable distance. None of these serious conditions was found to exist with the exception of the last, and that is the least objectionable."

Since this investigation was concluded, running water has been installed in all of the houses.

The number of sleeping rooms in the company's dwellings was reported at 929, which were occupied by 2,239 persons, or an average of 2.4 per room.

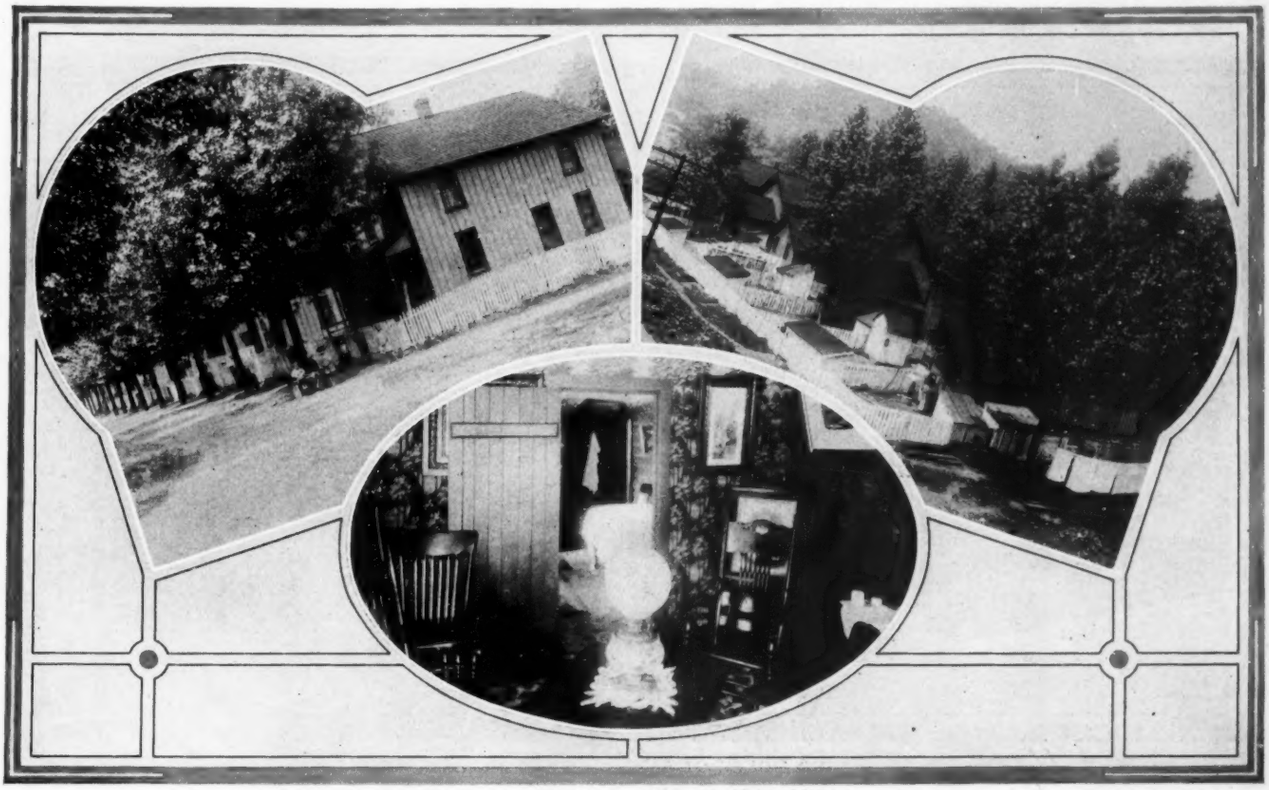


FIG. 8—FRONT VIEW OF DOUBLE HOUSES WHICH RENT FOR $2.25 A SIDE

FIG. 9—WELL-KEPT YARDS OF THE $2.25 HOUSES

FIG. 10—INTERIOR VIEW OF A WORKINGMAN'S HOME; THE RENT IS ONLY $2.25 MONTHLY

This is certainly a gratifying showing, particularly when compared with published results of surveys of other industrial communities. The nationality of the families occupying these dwellings shows a great predominance of American-born. The place of birth of these families and the per cent of the total follows: United States, 77.7; Austria, 6; England, 4.3; Italy, 4; Ireland, 3.3; Wales, 2; Germany, 1.7, and Hungary, 1. The report contained a large amount of detailed information with reference to the condition of the houses, appearance of the yards, etc. The report covering nine dwellings on Peelor street, Johnstown, will be summarized briefly, and can be considered as an average of conditions in all of the company houses. These dwellings rent for $6 a month. The appearance of the yard was graded as excellent in three instances and good in six; appearance of the rooms was excellent in three and good in six; the condition of repair was excellent in five and good in four. All of these houses are provided with running water and inside closets.

In a number of the accompanying illustrations types of the company houses are clearly shown. Fig. 2 is a view of a row of two-story double houses in Minersville, now the 14th ward of Johnstown. Each side rents for $5.40 a month and is provided with running water, inside toilet and an enameled sink. A front view of three double houses in East Conemaugh Borough is illustrated in Fig. 3. Each side contains five rooms and a cellar, and is provided with an inside toilet and running water. These houses were built in 1889 and rent for $8.50 a month. The street is curbed and has a concrete sidewalk and the dwellings are well-suited to the needs of a workman having a small income. In Westmont, a beautiful suburb of Johnstown, located on a plateau overlooking the city at a height of 570 feet, the Cambria Steel Co. owns 14 frame houses. Each contains seven rooms, toilet, bath, electric lights, gas and reception hall. Nine have hot air heat and five are heated by hot water. Nine of these houses, a type of which is shown in Fig. 4, rent for $20 a month and five for $25. Ten of these houses were built in 1909 and four in 1911. They are occupied by foremen, assistant foremen and superintendents employed in the Cambria works.

The double houses on Peelor street, previously referred to, which rent for $6 a month, are shown in Fig. 5. Each side contains five rooms and being located near the plant, they are particularly desirable, as the workmen living in these houses are not compelled to pay carfare to reach their places of employment. Fig. 6 is a view of a single house in Westmont, which contains five rooms, inside toilet, running water, sink and other sanitary conveniences and rents for $7 a month. Double frame houses in Westmont, six rooms to a side, are shown in Fig. 7. They contain inside toilets, running water, etc., and rent for $8 a side. Types of the last two dwellings, however, no longer are built.

At Birmingham, Blair county, Pa., where limestone quarries are operated, the Cambria Steel Co. owns a number of double houses, as shown in Figs. 8 and 9. Each side contains four rooms and is furnished with running water. The monthly rental is only $2.25 and that the occupants take great pride in their homes is indicated by the neat appearance of the yards and the street. Fig. 10 is an interior view of one of these $2.25 houses. The neat appearance of the rooms, furnished in harmony with the workman's means, is typical of conditions that may be found at any time in any of the Cambria Steel Co.'s dwellings.

To encourage its employes to become house owners, Cambria offers every inducement. Large tracts of land controlled by the company have been subdivided into lots, which are sold at comparatively low prices. Dwellings will be built by the company for the employes, covered by a mortgage at the usual commercial rate of interest. From a number of the company houses no rental is received. These are occupied by pensioners and disabled employes and their families. Some of these dwellings have been so occupied for many years and the inhabitants are never disturbed nor is a request made for rent as long as this beneficence is found to be necessary.

For more than 40 years a library has been maintained and the magnificent three-story structure, now the home of

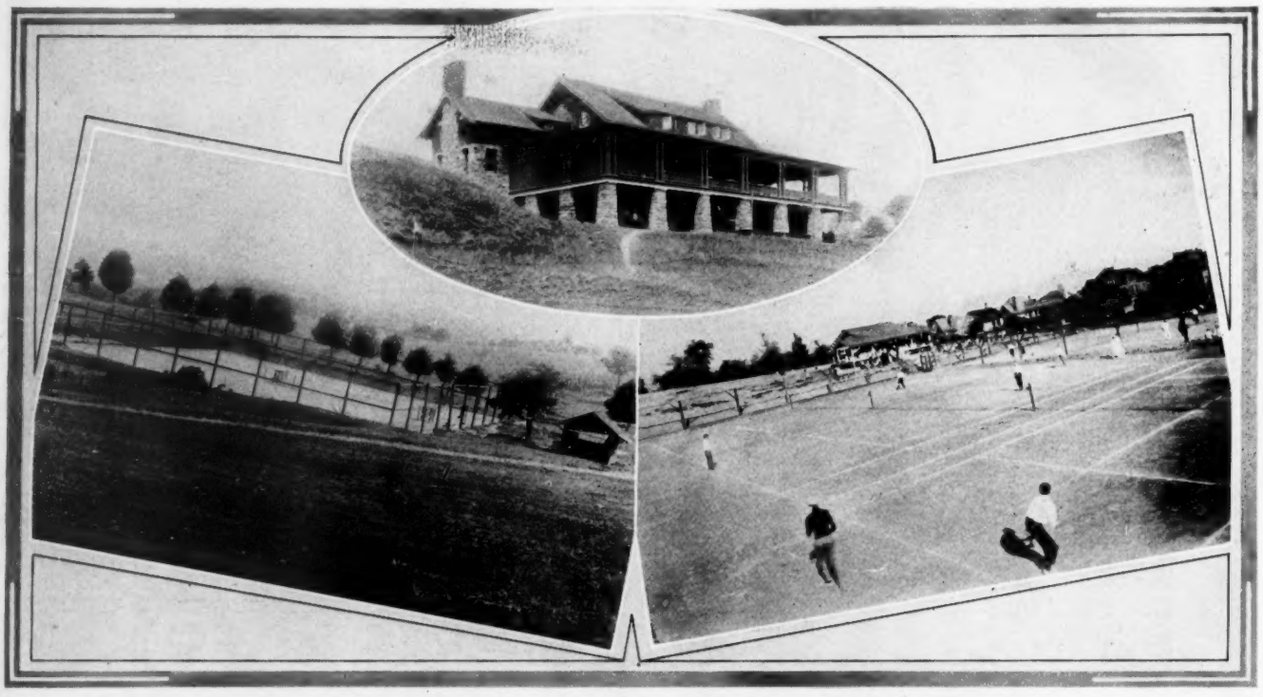


FIG. 11—CLUB HOUSE OF THE JOHNSTOWN COUNTRY CLUB

FIG. 12—ONE OF THE LAWN TENNIS COURTS FIG. 13—GROUNDS OF THE WESTMONT TENNIS CLUB

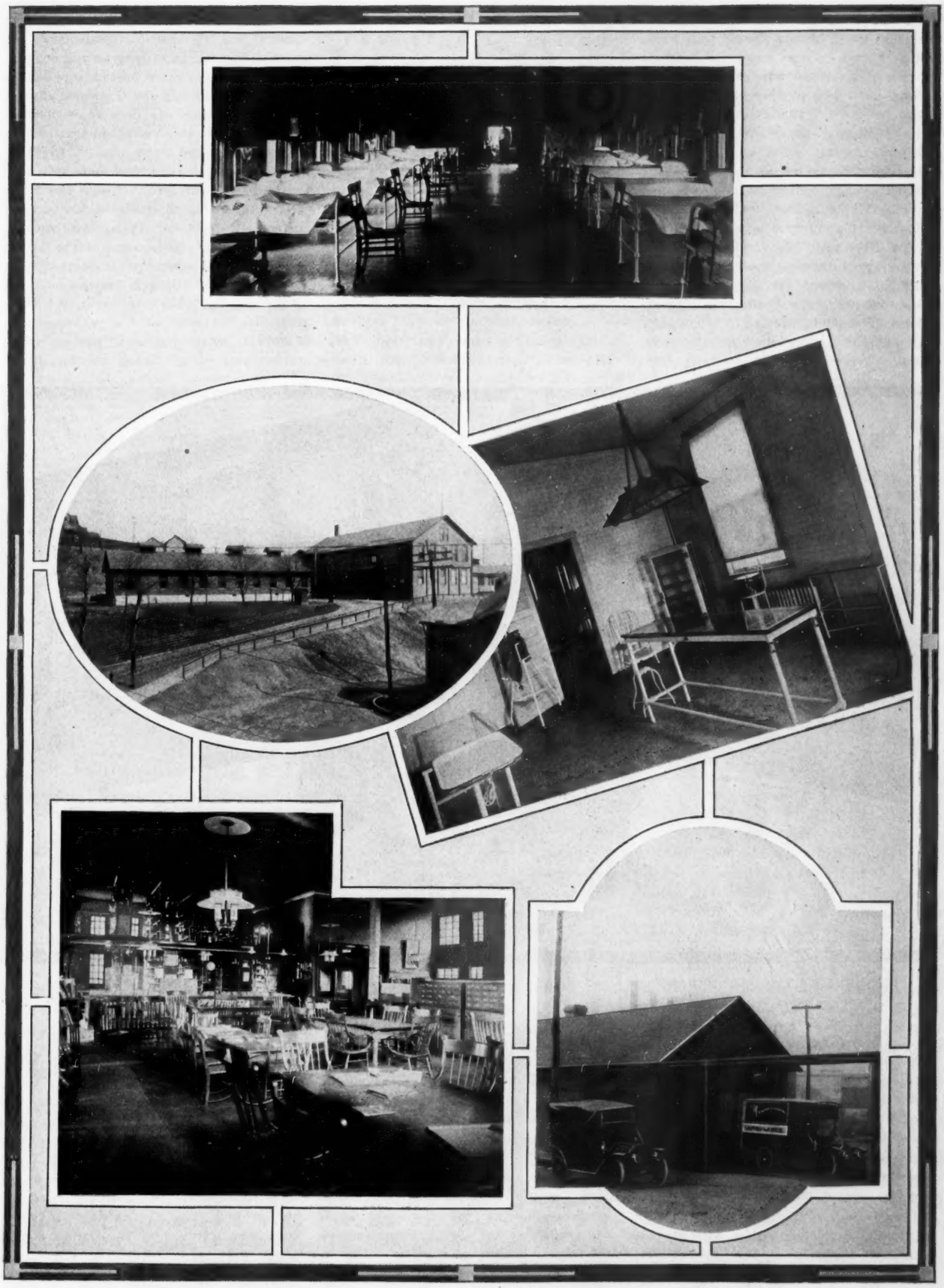


FIG. 14—A VIEW OF ONE OF THE WARDS IN THE CAMBRIA HOSPITAL

FIG. 15—EXTERIOR VIEW OF THE CAMBRIA HOSPITAL

FIG. 16—THE HOSPITAL OPERATING ROOM

FIG. 17—REFERENCE ROOM IN THE CAMBRIA LIBRARY

FIG. 18—CAMBRIA'S AUTOMOBILE AMBULANCES

this institution, contains nearly 15,000 volumes of an annual circulation averaging 70,000. The original Cambria Library Association was organized as a private institution and on a co-operative basis, on Feb. 1, 1870. Each member pledged $3 and the Cambria Iron Co. gave an amount equal to the sum of the other contributions. Six months after its organization the membership totaled 206 and the books numbered 770. Desiring to extend the privileges of the library to its employes without charge, the Cambria Iron Co., in 1877, leased the library for a period of 10 years, having agreed to pay all expenses, provide suitable quarters and maintain the library in first class condition. Subsequently a building was was willing to replace the entire institution, Mr. Carnegie's offer was accepted, although the Cambria company donated the additional ground required and all of the necessary equipment. The present library building was formally dedicated on Feb. 19, 1892. In 1895, the Cambria Iron Co. proposed to make the library entirely free, agreeing to meet any annual deficit. This proposition was accepted, and on Aug. 17, 1895, the library was thrown open to the public. Previous to this time the library had been sustained more or less by popular subscriptions and the donations of the Cambria Iron Co.

Various social and educational features have been fostered by the library statics. The high proficiency of these classes and the increasing demand for membership, is directly traceable to the interest maintained in the Library Association by the Cambria company, and to the selection of men from its departments who serve as instructors in the school.

The reading room and reference department is well provided with the latest scientific works and periodicals and is patronized by members of the working community of Johnstown. The auditorium of the library is donated free of cost to organizations desiring a meeting place, but unable to pay rent. During the 41 years of its existence, the Cambria library has been and continues to be a powerful factor in the educational development of the Johnstown workingman.

FIG. 19—MEN OF ONE DEPARTMENT AT THE PAY STATION

FIG. 20—INTERIOR VIEW OF ONE OF THE PAY STATIONS

FIG. 21—THE PAY WAGON

erected by the Cambria Iron Co. for the exclusive use of the library and when it was dedicated, March 5, 1881, Daniel J. Morrell, general manager of Cambria, on behalf of the company, presented to the trustees of the library association, the deed for the building and the site. Night classes were established and educational courses were instituted, attendance being without cost to the workingmen of Johnstown.

In 1889, the library was totally destroyed by the flood, and upon hearing of this calamity, Andrew Carnegie requested the privilege of restoring the building. While the Cambria Iron Co. since its organization. In 1881, the Cambria Scientific Institute was organized by the Library association, the principal object having been to secure lectures on scientific and other educational subjects. Educational classes for the employes of the Cambria Iron Co. were started in the latter part of 1881 and in the following year the first night school was organized with a director and six instructors. Night classes continue to be maintained and in 1911 the total enrollment reached 148, the course embracing mathematics, mechanical and structural drawing, algebra, trigonometry, strength of materials and graphic

To stimulate interest in outdoor recreation and exercise, two flourishing organizations, known respectively as the Johnstown Country Club and the Westmont Tennis Club, are maintained. A large portion of the cost of laying-out the grounds and the erection of buildings was defrayed by the Cambria company, but to stimulate the interest of those benefited to properly care for the properties, a small share of the burden of maintenance is borne by the members. The Johnstown Country Club traces its beginning back to 1895, when

a number of the residents of Westmont, a Johnstown suburb, laid out a small golf course, and in 1903 the Cambria company donated the use of an 120-acre tract, on which a nine-hole course was surveyed. In 1907, owing to the encroachment of the residential section of the city, it became necessary to abandon the old links, and a new course was laid out by the Cambria company on a part of the Cambria farm, south of the old links.

The club house, built during the past few years, is a commodious structure erected on the slope of a hill overlooking the golf links. The first and porch floor is built of field stone laid-up rough, and the upper portion is finished with shingles, imparting to the building an exceedingly artistic appearance. The first floor is finished in mission style oak with exposed beams overhead. One of the features is a large open fireplace, built of field stone gathered from the mountains nearby. The men's locker room is on the first floor and the ladies' room is on the third floor. The cost of the building was defrayed by the Cambria company, which also maintains the golf links and grounds. The income from the members is devoted to the maintenance of the club house and also defrays the expenses of the social features of the organization. The majority of the board of governors is appointed by the president of the Cambria Steel Co., the remainder being elected by the membership. To afford the young men of Johnstown, especially those employed in the Cambria works, an opportunity for outdoor sports and other amusements, the privileges of the club are extended for limited terms, at their pleasure, on the payment of a small monthly fee.

Westmont Tennis Club

The Westmont Tennis Club maintains six courts and has membership of 150 in the senior and 150 in the junior classes. The cost of grading and laying out the courts was defrayed by the Cambria company, although the club house was erected at the expense of the members. The exclusive use of the courts is limited to the senior members of the club during the first five days of the week after 5:30 p. m. and Saturday afternoons, while the juniors have access to the courts on Saturday mornings and on other days until 5:30 p. m.

The method of disbursing the semi-monthly pay, aggregating approximately $500,000, which is distributed among 15,000 to 20,000 employes, is as expeditious as it is efficient. The system pursued is exceedingly simple, which undoubtedly accounts for its freedom from error. During the period that this method has been followed, the losses that have been incurred by the payment of wages to the wrong men have been slight and will hardly total $100. For many years an effort was made to disburse the wages on two fixed pay-days each month. This involved the handling of a tremendous sum of money at these periods and necessitated the shipment of the funds from Philadelphia. While every effort was made to reduce to a minimum the amount of time spent by each man waiting in line at the pay window, nevertheless the time lost in this way was considerable, particularly when spread over the large number of men employed. A system of paying by checks, temporarily tried, merely transferred the work to the local banks which were compelled to carry large amounts of cash to redeem the thousands of checks presented. Another unfavorable feature of the semi-monthly pay-day, which largely affected the merchants of Johnstown, was the increase in trade at this period. This necessitated the employment of additional clerks with a subsequent decline in business toward the approach of the following pay day.

Every Day a Pay-Day

This has been eliminated entirely by the new system now in vogue, which makes every day a pay-day for Cambria employes. In place of paying-off the entire force of men on one day, this work is spread over the semi-monthly pay period, the employes of certain departments being paid on fixed days, which requires the payment of not over 2,000 men each day. Four pay stations are conveniently located throughout the works, where the men are paid at periods, which will not result in a loss of the company's time. During the noon hour and when the men are changing shifts are the periods when the greatest disbursements are made. The work of distributing the wages is handled entirely by the paymaster and a clerk, although the watchman serves as an assistant, filling the coin changer as rapidly as the trays are emptied. Notices of pay-days are posted in each department and at certain periods during the noon hour, or during a change of shifts, the foreman of a certain department and the men directly under his charge, line up at the pay window. The foreman steps into an enclosure adjoining the paymaster's office and identifies each employe as he steps to the window for his wages. The employe calls out his number and name, and the clerk, referring to the pay sheet, announces the amount of wages, which is counted out in specie by the paymaster. The men are paid at an average of 12 to 15 per minute. If any employe disputes the amount paid, entries on the pay sheet will show him at a glance the wages due. As far as possible, the men are paid in specie, as this expedites the paymaster's work. The wages are figured to the nearest five cents, as this eliminates the payment of pennies. This system results in no loss to the employes, as the item of fractional nickels balances itself from pay to pay.

The daily payment of wages has proved eminently satisfactory to the merchants of Johnstown, as trade activity is uniformly spread out over the entire month. The local banks likewise are in position to meet the daily payroll requirements and no special shipments of outside funds are required which were necessary when there were only two pay-days each month. The payroll sheets are signed by the various department foremen. In Fig. 19 are shown the employes of one of the departments lined up at the pay window. This is in striking contrast to the thousands which formerly surrounded the company's office waiting for their wages when the old system was in operation. Each morning the paymaster obtains sufficient funds for the disbursement of that day's pay. The money is placed in a steel safe, which is hauled to a pay station of the works in a wagon provided with a steel body. This affords double protection for the funds while they are being conveyed through the streets of the city.

Asks Dissolution

Judge Collier of the superior court, Indianapolis, has appointed John Boesinger receiver for the Acme Foundry Co., Indianapolis, on the application of John M. Haines, a stockholder and president of the company. The other officers of the company agreed to the appointment of a receiver. Mr. Haines alleges that the company is insolvent, and that he and other officers cannot agree as to the manner in which the business should be conducted. Indebtedness of the company is placed at $8,400. The plaintiff asked that the receiver wind up the affairs of the company and that the court dissolve the corporation. It began business Feb. 13, 1911.

The Manitowoc, Wis., foundry of the Aluminum Castings Co., Cleveland, will be leased by the Chicago & Northwestern Railroad Co., for warehouse purposes, according to present plans. The castings company recently decided to abandon its Manitowoc works because of labor troubles and proposed to locate its principal western works at Milwaukee, where leases are being negotiated for two foundries.

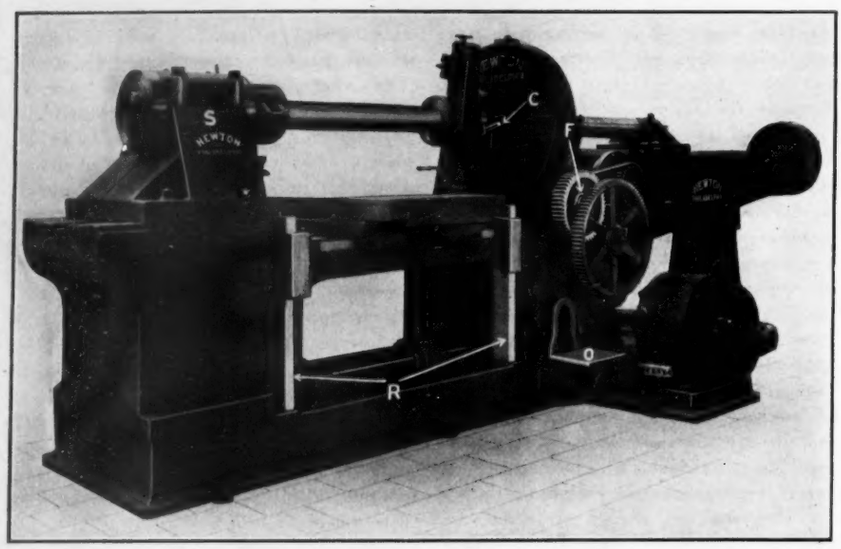


FIG. 1—LOCOMOTIVE CYLINDER AND VALVE CHAMBER BORING AND FACING MACHINE, SHOWING MOTOR DRIVE

Locomotive Cylinder and Valve Chamber Boring and Facing Machine

While the standard type of locomotive cylinder and valve chamber boring machine, built by the Newton Machine Tool Works, Inc., Philadelphia, was designed to bore and face both ends of the cylinder at the same time, a second operation was required to bore the cylindrical valve chamber and considerable time was devoted to resetting the work. A new machine for this work which eliminates resetting for the second operation is illustrated in Figs. 1 and 2. The spindle of this machine is 7 inches in diameter, the gear feed is 9 feet with hand adjustment in addition to rapid power traverse in both directions.

To permit of using small bars for boring the valve chamber, the end of the spindle is fitted with a large taper with retaining and drift key slots. The spindle is caused to rotate in unison with the spindle sleeve by means of a double spline and full-length keys. Fig. 3 shows the spindle and sleeve construction in detail. The spindle sleeve revolves in capped bearings so arranged that the driving worm wheel is supported on both sides. The driving worm wheel is approximately 41 inches in diameter and engages with a hardened steel worm fitted with a roller thrust bearing, both arranged to be submerged in a bath of oil at all times, and as both have a bearing in a common casting, the possibility of chatter is eliminated. The adoption of the worm wheel drive is also particularly desirous when boring work with intermittent surfaces such as is encountered in facing the ports in locomotive cylinders, as any spring due to the release of tension when operating under heavy cuts is largely taken up by the angle of the teeth.

The surface, *B*, Fig. 3, is cast integral with the spindle sleeve and serves to carry the facing arm. As this bearing carries no key, it is possible to bore while the facing heads, without removal, hang stationary, or the facing and boring can be accomplished simultaneously. The engagement of the facing heads for rotation is accomplished by swinging the lever, *C*, Fig. 1, attached to the eccentric clamp. The sleeve for supporting the spindle in the outboard bearing also has a facing head bearing cast solid and the engagement of the head is accomplished in the same way.

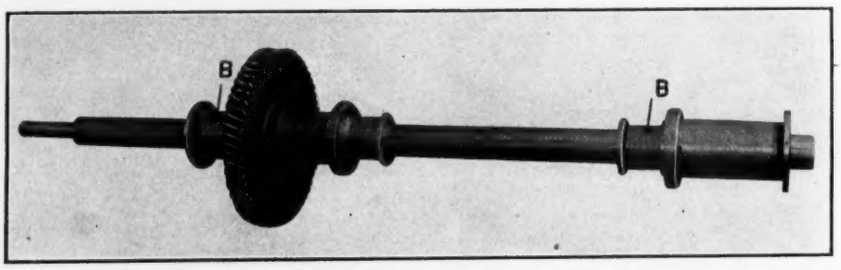


FIG. 3—DETAILS OF SPINDLE AND SLEEVE CONSTRUCTION

The minimum distance between the center of the spindle and the top of the work table is 16 inches and the maximum distance, 40 inches. The work table is 36 inches wide, 60 inches long and has 30 inches of hand cross adjustment. The work table is fitted with an ample number of T slots and has a full bearing on the saddle, adjustments being made by a taper shoe. The maximum distance between the ends of the facing heads is 50¼ inches. For driving the machine the use of at least a 15-horsepower motor is recommended. With a motor speed of from 460 to 1,380 revolutions per minute, spindle speeds of 3 to 9 revolutions per minute are available and feeds per revolution of spindle from 0.0595 to 0.3018 inch can be obtained. A reversing, quick power traverse of the spindle of 9.4 inches per revolution of spindle is at all times available. The knee has a working surface, 53⅛ inches long, 40 inches wide and the maximum distance from

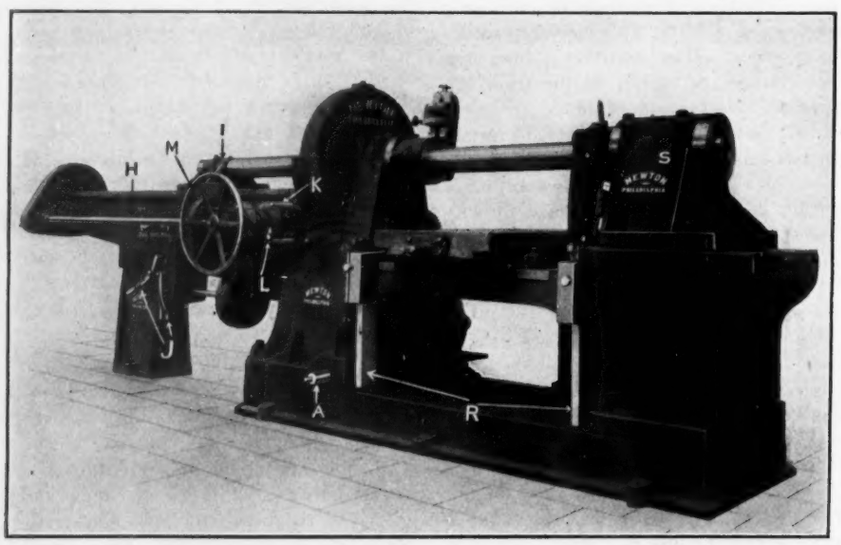


FIG. 2—OPERATING SIDE OF BORING AND FACING MACHINE

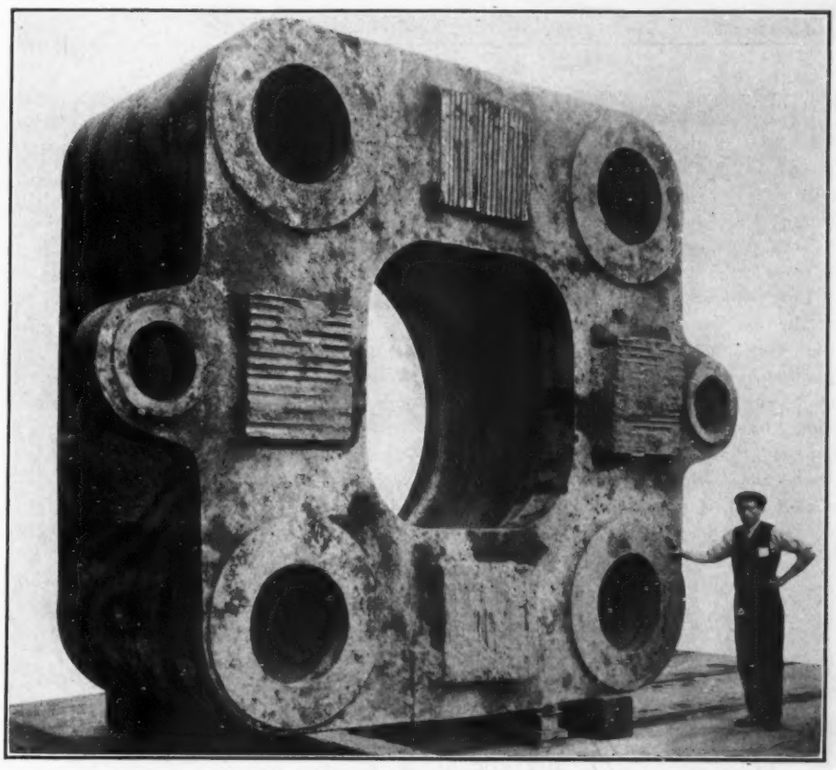
the center of the spindle to the top of the finished surface on the knee is 48½ inches, while the minimum distance is 24½ inches. The approximate net weight of the machine is 47,000 pounds and the over-all floor space occupied is 26 x 8 feet, including the extension for the motor bracket.

Power is transmitted from the motor through spur gears to the shaft, *F*, Fig 1, and it is transmitted to the left-hand side of the machine for the feed motion, and to shaft, *H*, Fig. 2, for the fast power traverse. Feed motion to the spindle is obtained by feeding the stock trolley, *I*, Fig. 2, which has a square lock bearing on the horn, and the bearing for the spindle is bronze-bushed and is equipped with roller bearings to take the thrust in both directions. The six feeds are obtained by operating the levers, *J*, controlling the sleeves on which the feed gears are mounted. Only two levers and one hand wheel are used frequently. Lever *K* controls the engagement of the feed or fast power traverse and the movement of lever *L* controls the direction of the fast traverse. Hand wheel *M* operates the hand motion of the spindle. In operation, the spindles are placed on the machine and the valve chamber is bored first. The spindle then is withdrawn by power, the table is elevated and is adjusted crosswise to bring the bore of the cylinder into alignment with the spindle. While the cylinder is being rough and finish-bored, it is fitted into the valve chamber, and after the finished boring and facing of the cylinder is completed, the table is lowered and adjusted crosswise to bring the valve chamber into position for boring the valve chamber bushing. The rapid elevation of the table is accomplished by a small, 3-horsepower motor mounted on the pad, *O*, Fig. 1, and for fine adjustment a long-handled ratchet is placed on the shaft, *A*, Fig. 2. When suggestions were obtained with reference to the proper alignment of the tables it was found that the theories differed widely, some engineers having recommended the use of four elevating screws. However, the Newton Machine Tool Works, through experiments, found that two screws are most desirable on account of the small number of joints, provided the knee is properly guided by rigid, finished surfaces on the uprights as shown at *R*, Figs. 1 and 2.

The tool slide in the facing heads has an independent adjustment for setting the tool to the depth of cut, and the tool slide is mounted on the front of the arm to maintain rigid construction. The in and out adjustment of the tool slide on the arm is accomplished by means of a star feed. When a cylinder is placed on the table, the saddle on the knee is adjusted toward the facing arm on the worm wheel sleeve, and to accommodate cylinders of different lengths, the outboard bearing, *S*, Figs. 1 and 2, is adjustable.

Large Hydraulic Press Casting

Several unusually large steel castings and forgings have been completed recently by the Bethlehem Steel Co., South Bethlehem, Pa., for hydraulic presses of large capacity. The accompanying illustration shows a casting made for the cap of a 10,000-ton hydraulic press now being built for the Schoen steel wheel plant of the Carnegie Steel Co., at McKees Rocks, Pa. The cap weighs 375,000 pounds. This section is one of several steel castings and forgings recently completed, which require a special freight car to transport them to the point of erection.



CAST STEEL CAP FOR HYDRAULIC PRESS; WEIGHT 375,000 POUNDS

The columns of the large press now under construction are 32 inches in diameter and 37 feet long. They are made of Bethlehem fluid compressed gun steel, hollow forged, and of a special mixture to meet the severe conditions of the service to which the press will be subjected in the Schoen plant. The columns are the largest of any hydraulic press ever built and the copper-lined cylinder, 72 inches in diameter, exceeds any similar cylinder in size. The press will be operated at a comparatively high speed and will have a capacity of 60 car wheels per hour, although the guarantee is somewhat less. The two former presses for the Schoen plant, also built by the Bethlehem Co. and designed by its engineer, Casimir von Philp, are of greater capacities, but the parts are not of such enormous size.

Receivers Want to Borrow

Receivers for the McCrum-Howell Co. have issued notice that they will apply to the United States district court, Chicago, on May 29, for an order authorizing the company to borrow from time to time, to an amount not exceeding $200,000, and to issue certificates bearing 6 per cent and payable not exceeding six months after date. But $200,000 is not all the receivers expect to need in the way of new cash. In addition to that sum they want to borrow up to a maximum of $500,000, the last $300,000 being subject to the written assent of the committees of creditors of the company. The receivers' certificate will necessarily be a first lien on the estate, coming ahead of any distribution to creditors or stockholders.

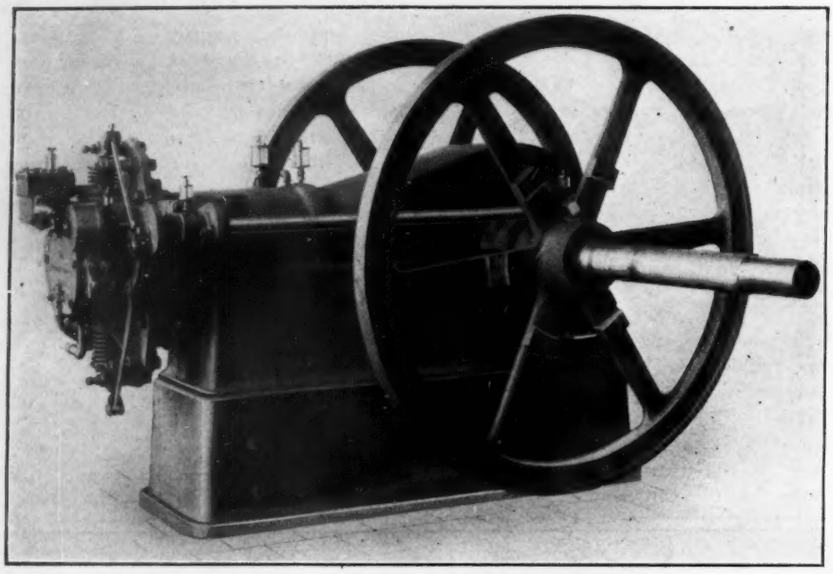


FIG. 1—THE WISCONSIN KEROSENE ENGINE

A New Kerosene Engine

A kerosene engine in sizes ranging from 50 to 200-horsepower, designed for general power purposes, recently has been placed on the market by the Wisconsin Engine Co., Corliss, Wis.

The principal feature of this engine is the carburetor, by means of which the kerosene is used direct without pre-heating, exactly as gasoline is used in a gasoline engine. This improvement has simplified the kerosene engine so that it is no more complicated than any other internal combustion motor and, it is claimed, has increased its economy and reliability. A side view of the engine is shown in Fig. 1; the rear view, Fig. 3, clearly indicates the location and connections for the carburetor, *C*, a cross-section of which is shown in Fig. 2. This device is known as the Secor-Higgins carburetor and the patents covering it are owned by the M. Rumely Co., La Porte, Ind. Aside from the carburetor, the engine is designed and built entirely by the Wisconsin Engine Co.

The original invention on which the carburetor is based was made by John Secor, one of the pioneer oil engine builders of the United States. Following Mr. Secor's primary invention, his services were secured by the M. Rumely Co., which went very exhaustively into the design of a carburetor to handle kerosene without pre-heating, exactly as gaosline is used.

As indicated in Fig. 2, the carburetor consists of three chambers containing gasoline, kerosene and water respectively. The gasoline is simply used to start the engine and is turned off after the machine is in motion. The water is injected with the kerosene to keep down the excessive heat. The large port, *A*, Fig. 2, connects the carburetor chamber *B*, with the engine cylinder. Air is drawn through the chamber, *B*, and the kerosene drips through a series of openings in the tube, *T*. The kerosene is so finely divided in entering the air chamber that it vaporizes readily and mixes with the current of air moving toward the engine. The water is added to the mixture in the same manner. The entire carburetor mechanism is contained in a rigid cast iron box and is fitted with an aluminum valve operated by the governor.

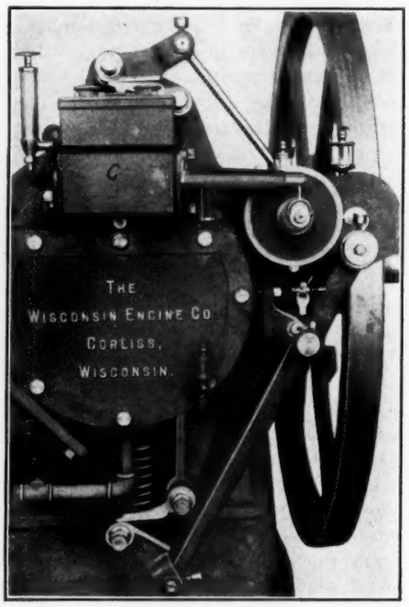


FIG. 3—END VIEW OF ENGINE, SHOWING THE CARBURETOR

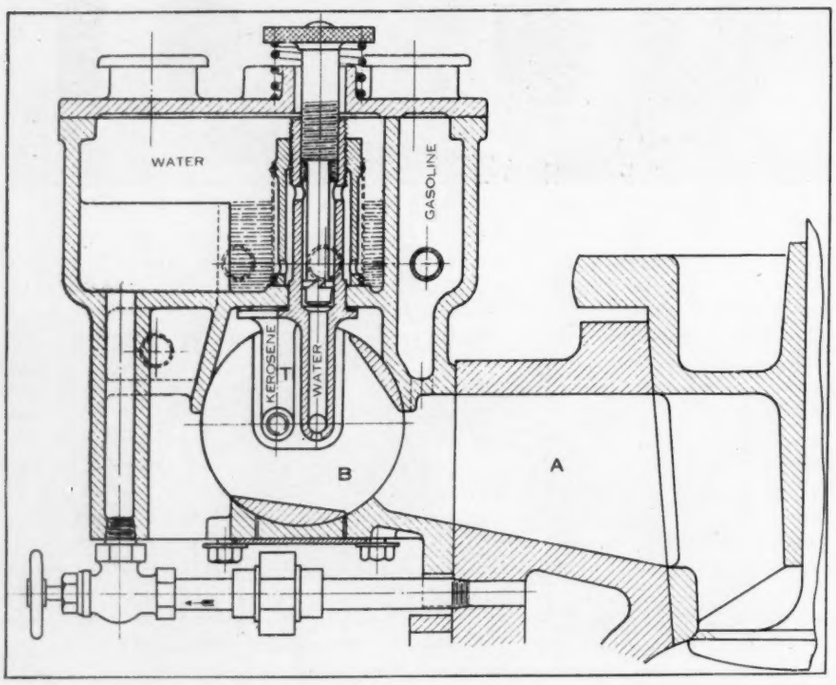


FIG. 2—SECTIONAL VIEW OF SECOR-HIGGINS CARBURETOR

The engine embodies the latest features in the design of large internal combustion motors. The cam shaft is operated by a set of spiral gears. The inlet and exhaust valves are of the poppet type and are fitted to the top and bottom of the cylinder head as shown in Fig. 1. They may be removed readily for cleaning or inspection. The valve gear, which is bronze-bushed, is equipped with rolling and multiplying levers of the silent operating type.

The frame of the engine is cast in one piece. A hard, close-grained, semi-steel liner is forced into the

cylinder, the space between the liner and the external wall forming the water jacket. The piston is made of the same hard material as the liner. The bearings and pins are of unusual size.

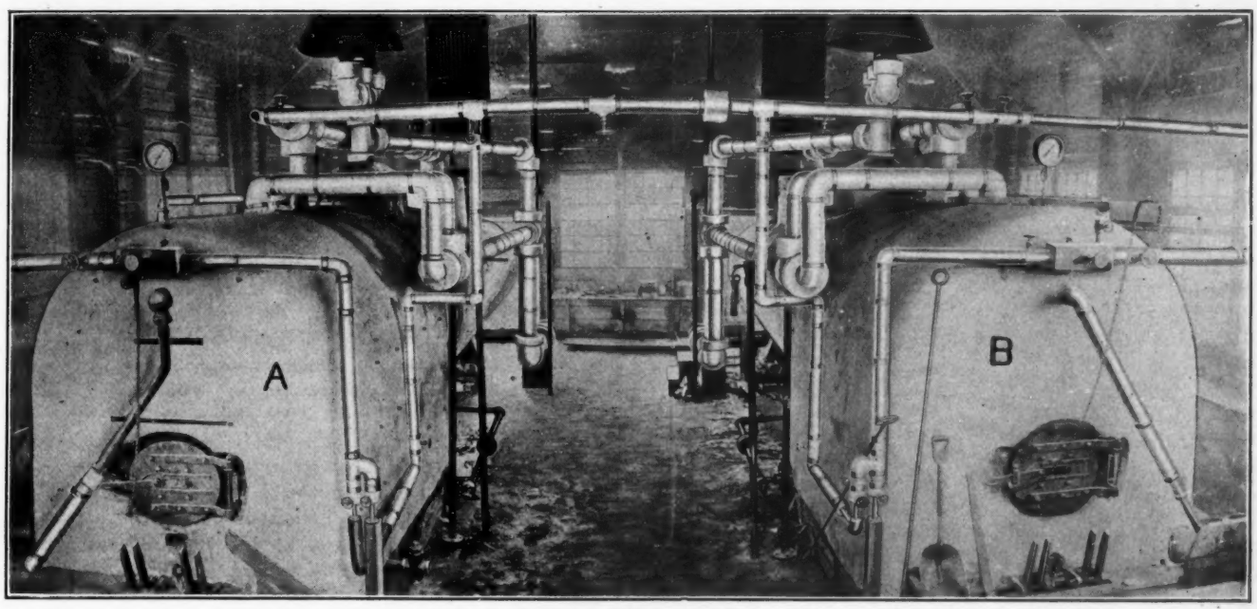
The combustion chamber is nearly spherical in form and is free from small pockets. It is cooled by the deep water spaces which surround it. The cranks are counter-balanced to insure smooth running and the crank case is completely enclosed. A multiple oiling system is used, every part being provided with a direct oil feed which drains to a common tank from which the oil may be drawn out or filtered. The ignition is of the make-and-break type, the current being supplied by a high tension magneto of the rotary type, geared to the lay-shaft. The engine is provided with a governor designed to regulate the speed within 3 per cent, or for special service may be equipped so that the speed will not vary over 2 per cent on sudden changes of load.

The machine is especially designed for manufacturers and will operate on gasoline or any of the oils of the naphtha group, but runs equally well with the oils which it is designed to use, namely kerosene, power distillate or gas oil. With ordinary prices for kerosene it is estimated that the engine produces a horsepower-hour for less than one cent.

The Marion Motor Car Co., Indianapolis, Ind., has increased its capital stock from $100,000 to $1,125,000, and will take over the Marion Sales Co.

Comparative Boiler and Firebox Tests

An interesting series of comparative boiler and firebox tests which have been in progress at Coatesville, Pa., under the direction of Dr. W. F. M. Goss, of the University of Illinois, for the Jacobs-Shupert United States Firebox Co. have been advanced sufficiently to permit a summary to be made of the results of the first set of experiments. The initial series of tests, just completed, involved the determination, for each boiler, of the evaporation from the firebox and from the tubes separately. The complete tests will culminate June 20, at which time both boilers will be subjected to low water conditions and both will be similarly treated until failure occurs.



INTERIOR VIEW OF TESTING PLANT SHOWING THE BOIL ER EQUIPPED WITH A RADIAL STAY FIREBOX AT *A*, AND THE BOILER AT *B* IS PROVIDED WITH A JACOBS-SHUPERT SECTIONAL FIREBOX

The results of the first series of tests, reported by Dr. Goss, are as follows: "Two boilers have been employed in the tests, one having a firebox of the radial-stay type and the other having a firebox of the Jacobs-Shupert type. Both boilers are identical in their general dimensions, which are as follows:

"Outside diameter of shell of boiler at front end, 70 inches; diameter of shell at throat, 83⅞ inches; number of 2¼-inch tubes, 290; length of tubes, 218 inches; inside length of firebox, 109⅝ inches, and inside width of firebox, 76⅜ inches.

"The purpose of the first series tests was to determine for each boiler the evaporation from the firebox and from the tubes separately. To make such a determination possible, the back tube-sheet was extended in all directions to the outside of the boiler, thus forming a diaphragm completely separating the water space on the two sides of this tube sheet. By this device each boiler was made in effect two boilers, the heating surface of one being all portions of the firebox, excepting the front tube sheet, and the heating surface of the other being the tubes and tube sheets.

"In carrying out the tests, each compartment was supplied with weighed water as though it were a separate boiler. The quality of the steam delivered from the firebox end and from the barrel end was determined independently, the purpose being to determine with the highest possible accuracy the heat delivered through the walls of the firebox and the heat delivered through the flues. The general dimensions of interest in this connection are as follows:

	Heating surface, square feet. Radial stay boiler.	Jacobs-Shupert boiler.
In the firebox.....	179.2	201.9
In the barrel.....	2805.1	2806.5
Total for both parts of the boiler.....	2984.3	3008.4

Tests With Oil

"A series of oil-fired tests have been run on each boiler. Three different rates of power have been employed in each series, the rate of fuel consumption ranging from 800 pounds of oil per hour to 2,100 pounds of oil per hour. The total water evaporated from both the firebox end and the tube end of the boilers has ranged from 10,000 pounds per hour to 24,000

pounds per hour, the evaporation per pound of oil being approximately 16 pounds in the test of lowest power and approximately 14 pounds in those of highest power. In all tests a surprisingly large percentage of the total work is done by the firebox. This percentage is greatest when the rate of power is lowest. Speaking in general terms, at low rates of power from 45 to 50 per cent of the total heat transmitted by the boiler is absorbed by the firebox. With increase of power the percentage falls, but the lowest value thus far obtained is approximately 34 per cent.

"As the heating surface of the firebox is a comparatively small fraction of the total heating surface of the boiler, it is evident that heat is transmitted from the firebox at rates which are extremely high. For example, results of a number of tests show the evaporation of more than 50 pounds of water per foot of firebox heating-surface per hour, which rate of evaporation is equivalent to the development of more than 300 horsepower by the firebox alone. In estimating the significance of these results, it should be remembered that in the experiments, the firebox virtually constituted a boiler by itself, that it had no more water about it than the normal locomotive firebox, and that it could not benefit by the circulation of water from the forward end of the boiler backward into the water legs. The fact that fireboxes subjected to such conditions could be worked at the rate of power stated, is suggestive of new possibilities in boiler design. The full development of these data will make of record facts with reference to the distribution of work between the firebox and tubes of a modern locomotive boiler which have never before been determined.

"The experimental results have not yet been sufficiently studied to permit a final statement to be made concerning the relative performance of the radial-stay boiler and the Jacobs-Shupert boiler. It appears, however, that the absorption of heat by the Jacobs-Shupert firebox is somewhat in excess of that absorbed by the radial-stay firebox, and that taking the boilers as a whole, the Jacobs-Shupert boiler is slightly more efficient.

"The oil-fired tests already described have been duplicated by a series of coal-fired tests. The results obtained, so far as they refer to the distribution of work between the firebox and the tubes and to the relative performance of the radial-stay boiler and the Jacobs-Shupert boiler, are in entire agreement with those obtained from oil."

In the accompanying illustration the boiler equipped with a radial-stay firebox is shown at *A* and the Jacobs-Shupert installation is at *B*.

Electric Furnace Discussed by S. T. Wellman

In the last issue of THE IRON TRADE REVIEW, page 1172, was published William R. Walker's paper, entitled "The Electric Furnace in Steel Manufacture," presented before the American Iron and Steel Institute at the recent New York meeting. Following the paper were discussions by E. B. Clark, T. W. Robinson and Samuel T. Wellman. Unfortunately, Mr. Wellman's remarks were not credited to him and appeared as a continuation of Mr. Robinson's discussion. The comments by Mr. Wellman were unusually interesting and are reproduced herewith:

"Mr. Walker's paper confirms my own observations as to the new method of refining steel and making an article that is of the very highest quality in every respect. We have heard a great deal in years gone by of the necessity, if high class steel was desired, of melting it in a reducing atmosphere, but this has never been possible in the furnaces which we had at our command because with the reducing atmosphere there came reduction of temperature too low for the proper melting of the steel; but with the electric furnace all these conditions are changed, and we can get the highest temperatures known in the arts without the presence of any free oxygen whatever.

"The electric furnace makes possible the production of ideal steel for any purpose whatever; whether it be the softest steel used for high grade sheets or plates, medium steel for axles and shafts, rail steel, or any of the numerous grades of ordinary tool steel, or for high speed alloy tool steel, or projectile steel.

"I think that the most important use that electrically-refined steel can be put to is the manufacture of rail steel. The railroads of this country have been learning some very costly lessons during the past few months as regards steel rail specifications, and it would seem that now they should be ready to buy the best and safest rail that can be made without regard to a slightly higher price or possibly a little more rapid wear.

Electrical Steel for Rails

"Rails made from electrically refined steel seem to me to offer the very best solution to the problem for the following reasons:

An ingot is produced which from all the evidence we have is almost perfect in structure. There is almost an absolute freedom from blow-holes which is caused by the freedom of liquid steel from oxides and gases of all kinds; but most important, ingots as large as 8 tons can be made which are practically free from segregation. Mr. Walker's statements in regard to this confirm my own observations.

The ingot can be made practically free from phosphorus and sulphur, and on account of its freedom from oxides and gases little or no manganese is necessary in the steel; thus the steel maker is able to make the ideal steel which is absolutely free from injurious impurities, and contains nothing but iron and the carbon to give it the necessary hardness for wear. It will probably be found that on account of its greater density not as much carbon will be necessary to give it good wearing qualities, as is the case in ordinary Bessemer or open-hearth steel.

On account of its freedom from oxides and gases, there is almost perfect freedom from cracking in rolling. This must make a better rail on account of more perfect surface, and freedom from little imperfections which start the wear and are also good starting places for cracks.

"The most valuable peculiarity in electrical steel seems to me to be its freedom from segregation. Most, if not all the failure of rails during the last winter have been practically on account of bad defects caused by piped ingots, the defects from which were not discovered in the blooms or in the finished rails.

"I think it more than likely that it may be found that the best rail steel if made from the electrical furnace can be made by making small additions of some of the numerous metals used as alloys, such as chromium, titanium, nickel, vanadium or tungsten. The effect of these different metals on steel is not yet generally understood, but it offers a very attractive field for study and experiment. From my own observations, I think that a small percentage of chromium, not to exceed 0.25, and a very much smaller amount of titanium would have a very good effect on the density of the rail, and would at the same time toughen and strengthen the steel.

"Some of the gentlemen present

may say to me, as my friend, Capt. William R. Jones, did to William A. Sweet, when he came down to Pittsburgh many years ago to the meeting of one of the engineering societies, to tell them how to make good rails. Said Captain Bill, "What do you know about making rails, you never made any," which would be a good criticism of anything I might say about this subject, so I will stop right here."

Rivetless Conveying and Elevating Chain

A rivetless conveying and elevating chain of a new type and which possesses several novel features, is shown in Figs. 1 and 2. The chain consists of three separate parts—two links and a pin—which can be quickly assembled, without the aid of tools, to form a chain of any length. Four links and one pin are required to form a section of the chain which is built-up of two inner and two outer links, held together by the pin which is inserted through slotted holes in the heads of the links.

Fig. 1 illustrates the two links and the pin; the inner link is shown at the right, the outer link at the left and the pin is in the center. The principal difference between the two links is in the shape of the heads and the slots. The inner link has a plain slot with rounded ends, while in the outer link, the slot is square with a circular enlargement at the inner end. Both links are concave at the center of both edges.

The center links can be arranged in two ways; they can be assembled to form either a solid or a slotted link, the latter being adapted for the insertion of various elevating or conveying attachments on top of the chain. When the links are placed with the straight sides together, or back to back, attachments can be fitted to the sides, which permit the chain to be used for side elevation or conveyance. In Fig. 2 a section of the chain is shown with the center

FIG. 1—DETACHED SECTIONS OF RIVETLESS ELEVATING AND CONVEYING CHAIN

links arranged to form a slot in which one of the conveying attachments is placed, being held in position by two prongs which extend into the slot and have holes corresponding with the two holes in the link, through which bolts or rivets may be passed. The attachment thus forms a bracket on the chain to which buckets or floats may be fastened when necessary.

The pin, Fig. 1, is round in the center, square on either end, and has an oval head extending as a flange on two sides of the pin; to assemble the chain, therefore, it is necessary to place only the two center links together, adjust the two outer links on either side of the center ones so as to form a continuous slot and to push in the pin with its oval head lengthwise of the slot. After the pin is in position, it is given a half turn, locking it so that it cannot work out sideways. The pin cannot turn because the square part of each head is held by the square slot of the outer links, and the tension of the chain holds the parts firmly in place. A special feature of this chain is the lip or extension of the head of the outer links, *A*, Fig. 2. The purpose of this is to close the slot back of the pins in the center links and to prevent dirt and gritty material from working in and cutting the wearing surfaces. The slot back of the pins in the center links is thus entirely closed, and, if desired, can be filled with a solid lubricant to eliminate friction between the pins and the inner links.

The links are drop-forged steel containing from 0.30 to 0.40 per cent carbon, and are broached to assemble to accurate pitch. The pins also are drop-forged and machine-finished, and the chains are shop-assembled to insure the free-working of the various parts when they are afterwards assembled. The different attachments are cast of malleable iron, and are designed to meet standard elevating and conveying requirements. The chain has a wearing surface on both link and pin equivalent to standard riveted eye-bar chain. The pins are reversible, so that after becoming worn one side, they can be turned

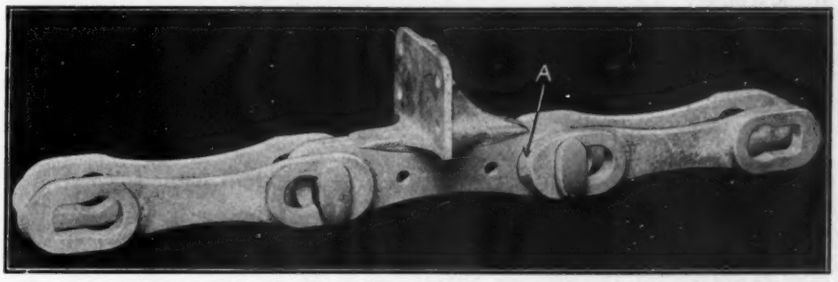


FIG. 2—ASSEMBLED SECTION OF RIVETLESS CHAIN WITH CONVEYING ATTACHMENT MOUNTED BETWEEN THE CENTER LINKS

180 degrees, thus restoring the chain nearly to its original pitch.

This chain was invented by Joseph L. Lee, general superintendent of the Cross Engineering Co., Carbondale, Pa., which is now manufacturing 4, 6 and 9-inch pitch chains.

Asks Increase

The annual convention of the Amalgamated Association of Iron, Steel and Tin Workers was adjourned in Chicago, last Thursday. The convention adopted a resolution providing for the recall of national officers who fail to do their full duty during a strike or lockout. All of the old officers, including John Williams, national president, and M. Tighe, secretary and treasurer, were re-elected. An increase of 15 per cent is said to be embodied in the wage scale of the sheet division for all special orders of 24-gage and heavier, and 20 per cent increase for orders 25-gage and lighter. Independent mill owners will be asked to participate in the 60-day examination of sales sheets in the sheet division to determine the wages to be paid tonnage men. Muck mill employes working on two high rolls are to be paid a higher rate for doubling bars, and for working billets, the advance amounting to from 17 to 17½ cents.

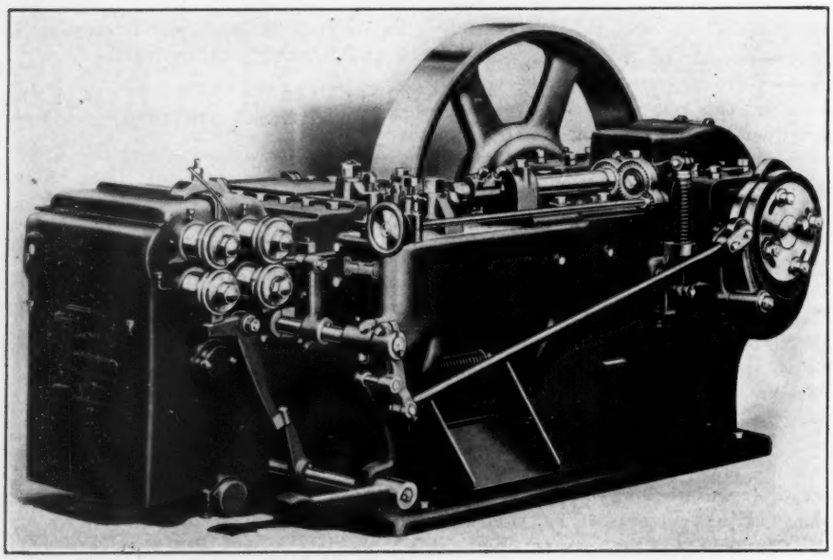
Rail Business Poor

New rail business is almost at a standstill, but the Workington company has taken a 6,000-ton order for India. Nothing fresh has come forward in the shape of inquiries, but West Australia is expected to be in the market shortly for 12,000 tons of 45's.—*The Ironmonger, London.*

The Mogul Motor Truck Co., Plano, Ill., has increased its capital stock from $125,000 to $500,000.

A Rivet Header With Automatic Feed Lathe

A new design of automatic feed for wedge grip rivet headers has recently been perfected by the National Machinery Co., Tiffin, O. As shown in the accompanying illustration, this machine embodies many novel features. On this machine long rods in mill lengths taken on the initial heat from the finishing rolls or reheated in furnaces, are started into the feed rolls by the operator, the rod being advanced automatically, and a blank sheared and headed and a finished bolt or rivet ejected at each revolution of the machine. Single blow bolts, rivets, track bolts or any type of single blow work can be made in this machine and the wedge gripping mechanism insures a product free from swollen shanks or objectionable fin along the body, as



WEDGE GRIP RIVET HEADER, EQUIPPED WITH AUTOMATIC FEED

the dies cannot spring during the upsetting. The feed rolls are water-jacketed, chilled castings. A new type of stock gage is employed which is designed not only to allow rapid and minute adjustment while the machine is in operation, but also to eliminate spring and thus to secure high uniformity in the quality of the product. In plants where these headers are operating, the output has been increased from 50 per cent upward as compared with the output of hand-fed machines. The wedge grip rivet header with automatic feed is built in 1, 1¼ and 1½-inch sizes.

Preventing Accidents.—The National Association of Manufacturers has been given for national distribution 30,000 copies of the pamphlet issued by the Industrial Commission of Wisconsin, prepared by C. W. Price, safety expert, on methods for preventing accidents in industrial plants. The commission's main exhibit of safety appliances was shown at the convention in New York and Joseph D. Beck, member of the commission made an address on the Wisconsin industrial insurance act or workmen's compensation law before the association.

Champion Mine Closed

The Champion mine on the Marquette range has been closed by the United States Steel Corporation, and the workings permitted to fill with water. It had been operated only on a small scale for several years. The output since the opening of the mine was 4,413,131 tons, but no ore was shipped last season and only 30,258 tons the three preceding years. The mine is owned by the Corporation and it is for this reason that the ore is being held in reserve. A great deal of exploratory work has been done and the mine will be in shape to yield a large annual output when opened again.

The City Railway Co., Chicago, has placed an order for several all steel electric dump cars with the Orrenstein-Arthur Koppel Co., Pittsburgh, for use in the construction work of the Chicago Traction System.

The Triumph Mfg. Co., maker of motorcycles, Detroit, Mich., is erecting a new factory and new equipment, including machine tools, power transmission machinery, etc., will be needed.

Use of Steel Trestles in Re-Equipment of Negaunee Mine

The Cleveland Cliffs Iron Co., is hoisting ore from its new shaft at the Negaunee mine, Marquette range, after three years had been spent in re-equipping the property at a cost of several hundred thousand dollars. It is now one of the best equipped mines to be found in any iron field. The Negaunee contains several millions tons of high grade ore.

The shaft is circular, 17 feet inside diameter. It is walled with 18 inches of concrete from the collar to the bottom, a distance of 900 feet. The machinery is of the latest design and is operated almost entirely by electricity, the power being supplied by the company's own hydro-electric plant on the Carp river.

The shaft house is of steel and the mining buildings are of fireproof construction.

An innovation in the matter of stock pile trestles has been tried, the trestles being constructed of steel, supported by circular pillars of reinforced concrete, the trestles thus being of permanent construction. Heretofore stock pile trestles have always been constructed of timber which necessitated their being dismantled and torn down every year, often causing the replacement of a large number of the trestle legs. Mining men are watching these new trestles with considerable interest to see how they work out in practical usage.

Buildings of Iron Ore Company Burned

The buildings of the Spanish-American Iron Co., at Daiquiri, near Santiago, Suba., were burned last week by the negroes now in rebellion in that island. The company is a subsidiary organization of the Pennsylvania Steel Co., Steelton, Pa.

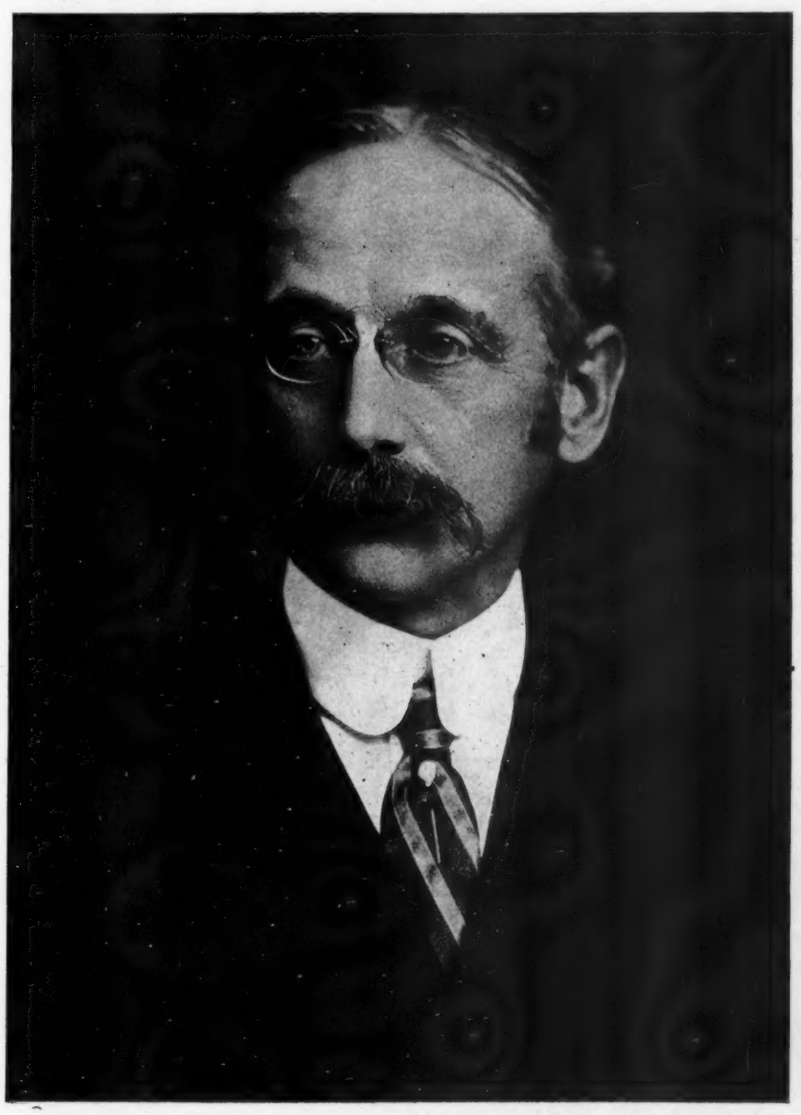
The property at Daiquiri was under the guard of seven men who were overpowered by the rebels. Buildings ownd by the company at La Playa were also burned. The company had secured promise of protection from the Cuban government and in response to a request of the authorities had a tug under steam at Guantanamo to transport troops. The soldiers, however, failed to appear. The patent inability of the government to protect foreign property will lead to American intervention, is the belief expressed in all circles.

Cleveland Meeting of Mechanical Engineers

Report of the Proceedings of the Spring Gathering of the A. S. M. E.—Visits to Plants and Entertainment Features

The attendance of a large number of past presidents was one of the features of the enjoyable spring meeting of the American Society of Mechanical Engineers, held at Cleveland, May 28 to 31. A special effort was made by the local committee to have all of the former chief executives of the society in attendance, and at the opening session, Wednesday morning, Samuel T. Wellman, Ambrose Swasey, Captain William R. Hunt, George Westinghouse, Jesse M. Smith and Col. E. D. Meier occupied seats on the stage of Chamber of Commerce hall. Regrets were read by President Alex C. Humphreys, from John Fritz, J. M. Dodge and Henry R. Towne. Five professional sessions were held and a large number of papers were read and discussed. The entertainment program, outlined by the Cleveland committee, was unusually complete and included formal and informal receptions, a lake ride and automobile trips and visits to local cloak factories for the ladies. Unusual facilities also were afforded for the inspection of the large number of manufacturing plants in the Cleveland district.

Ambrose Swasey, chairman of the local and citizens' committees, presided at the opening session, Wednesday morning. In a brilliant address, the visitors were welcomed to the Forest City by Mayor Newton D. Baker, and reply was made by President Humphreys. A business meeting followed, at which it was recommended that the constitution be changed with reference to the various grades of membership to permit of the enrollment of a large number of young engineers as associate members. The election of all new members by a council instead of by the membership as a whole was urged. A third resolution provided for the election of members at any council meeting, instead of at the annual and semi-annual meetings, as at present, so that proposed members would not be compelled to wait six months for action on their applications. Action on these recommendations was deferred and the professional session was opened with the presentation of a paper by J. Paul Clayton, entitled "A New Analysis of the Cylinder Performance of Reciprocating Engines," which is presented in abstract herewith:



ALEX. C. HUMPHREYS, PRESIDENT OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Knowledge of the cylinder performance of reciprocating engines is obtained almost entirely from indicator diagrams which visibly illustrate the work performed and provide a measure of the efficiency of the engine. They also aid in setting valves and furnish the basis in steam cylinders for applying Hirn's analysis for measuring initial condensation and for finding the diagram factor for the basis of design. The idea has prevailed that the value of the diagram was limited only to these and minor uses, but the investigation described in the paper discloses the fact that the indicator diagram obtains in itself the evidence necessary for an almost absolute analysis of cylinder performance, results which, heretofore, have not been considered possible. In obtaining these results, the diagram has been transferred to logarithmic cross-section paper and by this means a figure has been drawn which has been termed a logarithmic diagram, by the aid of which it has been found that the expansion and compression curves of all media used in practice obey substantially the polytropic law, $PV^n=C$. From this fact rational methods have been developed for approximating the clearance of a cylinder, of closely locating the cyclic events, and of detecting moderate leakage with the engine in normal operation.

It has been discovered that the value of n in the law, $PV^n=C$, is controlled directly in steam cylinders by the value of the quality of the steam mixture at cut-off, called X_c, and that the relation of X_c and n is

practically independent of cylinder size and of engine speed for the same class of engine. This fact permits of determining the actual amount of steam and water present in a cylinder at cut-off from the experimentally-determined relations of X_e and n, and thus to obtain from the diagram a knowledge of the actual steam consumed.

In the ensuing discussion, R. H. Rice expressed his appreciation of the labor and difficulty attending an investigation of this kind, which, he said, had been a matter not of days or months, but of years of study. He was afraid that in the use of high-pressure steam it would not be easy to apply the method described, on account of the difficulty of obtaining diagrams of engines at high speed. Another member thought that at slow speed, the method was liable to prove irregular. The greater relative importance of valve over piston leakage was discussed at some length by J. A. Stevens and was only briefly answered by Mr. Chapman, further discussion having been deferred.

For several years Thos. D. West has been conducting a series of experiments to ascertain the best methods of chilling and hardening cast iron and, in addition, in September, 1911, he began a series of tests of chillable iron which were extended through February, this year. Two papers were presented by Mr. West, which outlined his tests and gave the results of his investigations.

"New Processes for Chilling and Hardening Cast Iron," outlined a series of experiments to determine the economies of different methods of treatment in chilling or hardening cast iron during the process of cooling after pouring the mold. The first experiments showed how to produce mottled and white iron inside of a gray body and these led to the use of chillers in different ways. By the employment of heat-absorbing or hardening media, such as air, charcoal, powdered manganese, cyanide, etc., the experiments, among other results, indicate that the accepted idea of chilling occurring entirely while the molten iron is solidifying, is wrong. Furthermore, stronger irons can be used for car wheels, rolls, etc., without reducing the depth of chill obtainable in some castings. The experiments demonstrated also the superiority of air-cooling over metal chillers. A large number of written discussions were presented, some of which are given in part herewith:

By Dr. Henry M. Howe

"Mr. West found that if after the outer part of an iron casting has solidified and cooled at a normal rate to somewhat below its eutectic freezing point and thus became graphitic, the casting is suddenly withdrawn from the mold and quenched in water at a moment when the interior has already solidified, the inside will be of white iron. The fact that the inside of the casting is white, although the normal slow rate of cooling extended to below the eutectic freezing point, shows that it solidified as white iron. Because the inside solidified as white iron, the outside evidently did also. The graphitization of the outside must have occurred in that phase of the cooling by which the gray outside had outrun the white interior at the moment when the quenching occurred.

"Because the amount by which the cooling of the outside outran that of the inside must have been slight, we infer that this graphitization occurred in a very narrow range of cooling, and presumably below the eutectic freezing point. The reason why the inside remained white may be either (1) that it hurried through the temperature just below the eutectic freezing point too fast to allow its cementite to graphitize; or (2) that the graphitization was restrained by the pressure put on the interior by the rapid cooling and contraction of the exterior; or both these causes may have co-operated. In this particular case his further ingenious experiments showed that, if the slow cooling had not been interrupted, the interior would have been very gray.

"Thus Mr. West confirmed, in a very simple and effective way, the evidence of Heyn and Bauer that graphitization occurs chiefly immediately below the eutectic freezing point.

"The usual occurrence of white cores inside of gray iron pigs so often reported is probably due to pressure. If the outside of the casting becomes firm and rigid, the separation of graphite inside it immediately sets up pressure, because the graphite is so bulky, and the existence of this pressure tends to prevent the further formation of graphite in the parts further in. In most cases this tendency is resisted by the slower cooling of the interior than of the exterior, slow cooling in itself prolonging the opportunity for the graphitization of the cementite. Thus we have a struggle between slower cooling in the interior which tends to bring the carbon to the state of graphite, and pressure in the interior which tends to prevent it from assuming the form of graphite. In the majority of cases the slower cooling has the mastery, and the interior of the casting is as graphitic as the outside, but in certain cases the effect of pressure has the mastery and restrains the formation of graphite in the interior of the casting. It may often happen that the throwing of a stream of water on the pigs after their outside has turned gray, but before the inside has, or their removal from the sand in cold weather at this point in their cooling, may, as in Mr. West's experiment, lead to an internal chill."

By Carl Hering

"Like an electric current, a flow of heat encounters a resistance which opposes or checks it more or less, hence when the flow should be rapid, as in the chilling of a casting, this resistance to its flow should be kept as small as possible. The thermal resistance of the cast metal itself is a physical property of the material and is, therefore, beyond one's control, but the resistance between it and the chilling material can be controlled, and it is this resistance which is probably so much greater than all the others that it virtually governs the flow of the heat.

"The thermal resistance of the joint between two solid bodies, that is, at the surface of the mechanical (not soldered) contact, seems to be relatively very high. But with metals this resistance seems to be relatively far greater, as is shown by the fact that an iron bar with a transverse crack part way through it near its end, will, when that end is heated to redness, become red up to the crack; this shows that the heat in flowing to the cold end meets with a very high thermal resistance at the crack, even though it may be only an exceedingly thin one.

"Hence, in chilling a casting like a car wheel with an iron chiller, the heat must traverse the surface of contact and as the cast metal shrinks and the chiller expands, an actual separation must occur, and the very high thermal resistance introduced thereby will no doubt govern the flow of heat and reduce it greatly. This is shown by Mr. West's experiments in which he obtained a better flow of heat when he applied a pressure between the metal chiller and the shrinking casting. It is evident, however, that such a pressure contact cannot possibly be made between two cylindrical surfaces, as in casting car wheels.

"Another advantage in cooling with rapidly flowing air is that it affords a possibility of controlling the flow of heat from the casting, hence also the depth of chill and its uniformity in successive castings. This would not

be easy with metal chillers. Moreover, iron chillers are likely to be in actual, good, compressed contact at only a few points, and as the thermal resistance at those points would be considerably lower than at the rest of the surface, it is likely that the chilling would be greater at those points and hence not uniform."

By Paul Kreutzpointner

"The conductivity of a chilling medium being dependent upon its ability to carry away from the casting a maximum of heat in the shortest possible time, it is obvious, therefore, that if the chilling medium is a metallic substance, this metal should be as dense in structure as possible. Wrought iron, therefore, would seem to be the least adaptable to serve as a chilling medium, because of the presence of the cinder found in all wrought iron and which acts as an obstruction to the rapid movement of the heat from one particle to another. Theoretically, tool steel would seem to be the best chilling medium of the metallic class. In every day practice, however, its high cost would eliminate its use."

By James A. Beckett

"Long experience in chilling cast iron has demonstrated that for surface chilling no better medium can be obtained than cast iron. When of the right composition it will keep its shape longer than any other medium used for this purpose. Surface chilling is almost entirely a matter of heat transference, but the efficiency of any chilled medium may be increased by the selection of a mixture of irons which have the tendency to a greater increase of combined carbon when remelting than is found in ordinary foundry irons. For many years plow castings have been made by using the chiller for the cope of the mold, in the upper surface of which was formed a receptacle, into which warm or hot water was poured just before the iron was poured into the mold. In this way castings were produced with a very close grain, which was susceptible to a very high polish. White iron used in the malleable iron industry, when subsequently annealed until practically all its carbon is in the graphitic form, may be restored to its original state in which practically all its carbon is combined by heating it to a cherry red and quenching it in cold water. This is a fact which is not as generally known as one would be led to believe. The immersion test opens a new field for further investigation and undoubtedly will be the subject of still further experiments."

Chillable Iron Tests

"Tests of Chillable Irons," presented by Mr. West, relate to the comparative strength of gray iron and of partly or wholly chilled iron as well as chillable iron alloyed with vanadium and titanium. Previous to these tests experiments were made for the purpose of establishing a size of round bars for making tests of chillable irons where it was necessary to have the bars either of a uniform gray structure throughout or capable of being chilled through their entire diameter. Attention was directed to the advisability of drop tests for cast iron and to the complexity and sensitiveness of chillable iron mixtures which require delicacy in mixing, melting, casting and testing.

Discussion by James A. Beckett

A written discussion of this paper by James A. Beckett is given in part as follows:

"While this paper, in the main, is a continuation of the research by which Mr. West has contributed much valuable labor while working out and demonstrating the value of his theories as to uniform test bars, it furnishes another instance where the standard test bar is not as reliable for special work, as it is for ordinary foundry use. He demonstrates the fact that a larger test bar will give more accurate results in white, or chilled gray iron.

"In the discussion, a few years ago, of the subject of a uniform standard test bar by means of which all the different varieties of cast iron might be subjected to a uniform test, the question was often asked if it were possible to make a test bar small enough so that it would not be too sensitive for accurate results in white or chilled iron testing.

"The writer has always held that while breaking tests of cast iron are at best of uncertain value, and the comparison of particular bars in any test, should not be given too much weight to obtain a fairly accurate knowledge of the strength of a casting the test bar used should nearly represent in its fracture, the average fracture of the castings which it represented. Because, unless the character of the fracture of the casting is known, the value of the test can not be determined with any degree of accuracy.

"The increase in the deflection of all-chilled or white iron which is referred to, is more apparent than real, and is probably influenced by the size of the test bar used. The difference in deflection between soft gray iron and chilled or white iron, is much more apparent when a smaller test bar, more sensitive to variations in cooling, is used. Some of the old time stove makers used a deflection test to determine the softness of their mixture of iron in which the test bar used was made from a pattern, 24 inches long, 2¼ inches wide and ⅛ inch thick, tested on supports 20 inches apart, the load applied in the center. This test was used long before foundrymen had the assistance of chemical analysis in determining the cause of their troubles, and it is surprising how sensitive were the results obtained by this crude test, in the soft irons used in stove making.

"While great strides have been made in the subject of testing cast iron during the past 20 years—in the advancement of which Mr. West has given much valuable labor—the subject is still in its infancy and much labor must be given to research along the lines of this paper, before we can safely assume that our practice is correct."

Paul Kreutzpointner, in a written discussion, stated that all chillable irons are chiefly used where they are subjected to crushing and bending stresses and the best manner of testing them, therefore, is by the application of crushing, bending and drop or pendulum tests.

Charcoal Iron in Car Wheels

In the discussion of Mr. West's paper from the floor, J. E. Johnson Jr., of the Lake Superior Iron & Chemical Co., referred to the importance of the iron chilling problem. He was of the opinion that the best chilled car wheels can be made only by the use of charcoal pig iron. Chemical analysis, he claimed, is not always an index of the quality of pig iron, and even the microscope he did not consider an infallible means of revealing why one grade of iron is better than another.

B. D. Fuller, of the Westinghouse Electric & Mfg. Co., said that damp ladles are the source of much trouble in foundry operation, and the dampness of the molds is frequently the cause of segregation spots in castings. So many conditions affect the quality of iron, he stated, that it is not unusual to obtain castings of varying physical properties, from day to day, poured from mixtures of the same analysis.

In concluding the discussion, Thomas D. West questioned the value of many of the results, for purposes of comparison, obtained from cast iron test bars. Reply also was made at length by Mr. West to the large

number of written discussions presented.

"Strength of Steel Tubes, Pipes and Cylinders Under Internal Fluid Pressure," was the subject of a paper prepared by Reid T. Stewart. To arrive at some definite conclusion as to what formula or formulae should be used for calculating the strength of tubes, pipes and cylinders subjected to internal fluid pressure, the different published formulae have been investigated and compared with the following results:

Clavarino's formula is theoretically correct for cylinders with attached heads, and Birnie's formula for heads held independently. These formulae are practically applicable to certain classes of seamless steel tubes and cylinders and to critical examination of ordinary commercial steel tubes, pipes and cylinders when sufficiently accurate data are available.

In commercial welded pipe the variation in thickness of wall, perfection of weld, etc., account for variation in bursting strength of sufficient magnitude to render unnecessary any consideration of Clavarino's or Birnie's condition of head support. All such variations give rise to errors on the side of danger when applying these formulae.

For ordinary commercial wrought pipe Barlow's formula is to be preferred. This formula is

$$\frac{p}{f} = 2\frac{t}{D}; \quad p = 2f\frac{t}{D}; \quad t = \tfrac{1}{2}D\frac{p}{f};$$

$$f = \tfrac{1}{2}\ D\frac{p}{t}$$

where

D = outside diameter in inches.
t = nominal or average thickness of wall in inches.
p = internal fluid pressure in pounds per square inch.
n = safety factor as based on ultimate strength.
f = fiber stress in pounds per square inch.

$= \frac{40{,}000}{n}$ for butt-welded steel pipe

$= \frac{50{,}000}{n}$ for lap-welded steel pipe

$= \frac{60{,}000}{n}$ for seamless steel tubes

$= \frac{28{,}000}{n}$ for wrought-iron pipe

Speed Regulation in Hydro-Electric Plants

An abstract of a paper, entitled "Speed Regulation in Hydro-Electric Plants," by Wm. F. Uhl, follows:

To obtain satisfactory speed regulation in a hydro-electric plant, it is usually insufficient to provide the turbine units with well-designed governors. Where the turbines are of the open flume type, and the velocity of approach does not exceed three to four feet per second, satisfactory regulation depends upon the fly-wheel effect of the rotating masses only, and the formula for calculating the speed variation is

$$d = \frac{800{,}000 \times \text{h. p.} \times \text{time}}{\text{r.p.m.} \times \text{r.p.m.} \times Wr^2}$$

Where encased turbines are employed, pressure variations occur which modify the results obtained from this formula. The ratio of the length of the turbine penstock to the head $\frac{L}{H}$, is a measure of the effect of these pressure variations. When this ratio is too great to obtain satisfactory results, the design of parts of the plant must be modified, or appurtenances such as pressure regulators and standpipes must be employed to reduce the pressure variations.

Large Steam Turbines

At the concluding professional sessions on Friday morning, a paper, prepared by A. G. Christie, on "The Present State of Development of Large Steam Turbines," was read. This paper was published in THE IRON TRADE REVIEW, May 9, page 1009. During the ensuing discussion Dr. De Laval gave further particulars concerning the Lindstrom steam turbine and furnished details which showed its operating economies. Prof. Moyer, in a written discussion, criticized the tabulation of turbine results given in the paper and added that in his opinion it was not sufficiently complete. He also criticized the results given for the Sulzer turbine. The test results included, he believed, were high, as they were compiled from data furnished by manufacturers. He expressed the opinion that more care should be exercised in incorporating in reports of this kind, tests made by interested manufacturers and suggested that more attention should be given to tests made by disinterested engineers. F. Hodgkinson detailed the operation of the Westinghouse turbine and aided by a stereopticon view and a model, he illustrated the manner in which the blading of this turbine is secured to the spindle. He stated further that an accident had never occurred to a steam turbine which was directly traceable to centrifugal force. However, he said that accidents were occasionally caused by rhythmic vibration generated in the blading, causing them to strike the diaphragm. To eliminate the danger of accidents, therefore, the blades in the Westinghouse turbine are gradually tapered from about the center to their juncture with the spindle. The blades thereby are greatly strengthened and vibration is largely reduced. Regarding the location of the bearings he added that it was an error to run them cool, as it is more economical to operate the bearings at a temperature of 180 degrees than at 80 degrees, because of the beneficial effect of the higher temperature on the oil. In concluding the discussion, Mr. Christie vouched for the reliability of the tests included in this paper.

Other papers presented follow: "A Discussion of Certain Thermal Properties of Steam," by G. A. Goodenough; "The Reduction in Temperature of Condensing Water Reservoirs Due to the Cooling Effect of Air and Evaporation," by W. B. Ruggles, and "The Discharge Capacity of Safety Valves," by A. F. Miller and A. B. Carhart.

At a meeting in charge of the administration committee, Howard G. Benedict read a paper entitled "The Mnemonic Symbolizing of Stores Under Scientific Management." He stated that the symbolizing of tools, equipment and of manufactured products has received considerable attention, but the symbolizing of stores or raw material has received little consideration. The essential points in connection with the symbolizing of general stores includes the classification, as far as possible, by representing the article by the initial, secondary or prominent letter, as an aid to memory. The system should permit of the convenient location of material in the storeroom by the symbol and the classification must be such so as to enable perpetual inventories in the controlling accounts. Symbols are included in the paper for miscellaneous stores, metals, etc. The discussion developed many points of interest and the paper, it was stated, opened an entirely new field for the classification and convenient storage of material as an aid to scientific management.

Gas Power Section

At the meeting of the Gas Power Section a paper entitled, "Bituminous Coal Producers for Power", presented by C. M. Garland, was discussed at length. An abstract of this paper follows:

The general arrangement of bituminous coal producers as designed for power, as well as the scrubbing apparatus is described and data is given on its efficiency and the amount of solid matter delivered in the gas. Data on the efficiency of the plant, composition of the gas, and operating costs, together with brief discussions on these items also are included. Figures for the first cost and operating costs at full load for a 1,200-horsepower plant are given in such a way as to make them applicable to different conditions of fuel and load. Utilization of waste heat is an item that has received little attention. About 12 per cent of the

heat in the fuel is lost in scrubber water while about 60 per cent is lost in the cooling water. These last two quantities are available for steam generated in the bituminous coal plant. Approximately 2½ pounds of steam can be generated per horsepower of the engine. In the case of a 1,240-horsepower plant, 3,100 pounds of steam can be obtained from the engine exhaust and jacket per hour. The cost of the exhaust boilers erected is about $2,000.

In reply to a question as to the comparative economy of natural and producer gas, Mr. Garland stated that producer gas is probably more economical than natural gas at 30 cents per thousand cubic feet. The utilization of exhaust boilers aroused considerable discussion and it was contended that the temperature of the exhaust should not fall below 300 degrees Fahr. It was the opinion of one of the members that the boilers, which are made of cast iron, might corrode rapidly if the temperature fell below 212 degrees Fahr. Also, it was stated, that some of these boilers have been in use three or four years and no repairs have become necessary. The size of producer plants for power purposes in this country, it was added, has not yet reached the 5,000 to 10,000-kilowatt unit stage. The reason for this is the comparative low cost of coal. What is believed to be the largest producer plant for power purposes in this country has a capacity of 3,000 kilowatts. It was stated that the adoption of 10,000-kilowatt units in large cities would depend almost entirely upon the cost of the fuel. Producer linings last almost indefinitely; in one instance a lining has been in service seven years and shows little wear.

Tests of Carburetors

A paper on "Carburetor Tests," prepared by Geo. W. Munro, outlined the problems of carburization for motor vehicle engines and pointed out the difficulties met in determining the performance of the carburetor as determined from the performance of the engine to which it is attached. The results of 400 economy tests on a single engine served by six different carburetors under identical conditions of speed and load, were presented in graphical form. Attention was directed to the economic importance of the carburetor, the desirability of applying more scientific methods in its development and the necessity of having available a testing plant, the constants of which are well distributed. These carburetor tests are among the first that have been made on the performance of carburetors and aroused considerable interest. It was suggested that further work along this line would result, ultimately, in increased gas engine economy.

"Problems in Natural Gas Engineering" was the subject of another paper presented by Thos. R. Weymouth. The many problems encountered, which require special applications of engineering principles in the production and transportation of natural gas, were discussed.

Sound Waves Photographed

Dr. Dayton C. Miller, of Case School of Applied Science, gave an interesting lecture on "Sound," before members of the society, Wednesday evening. Throught the "Phonodeik," an instrument which projects sound waves directly upon the screen, Dr. Miller showed photographic reproductions of sound waves of the voice, the flute and various other musical instruments. The reproductions looked like jagged streaks of lightning playing upon the white screen. Single words spoken into the "Phonodeik" showed waves of remarkable length when projected upon the screen.

After explaining there are two kinds of sound waves, tones and noises, Dr. Miller showed through an experiment how, when a boy, he might have played a few bars of "Home, Sweet Home," or some other equally appropriate song, when he dropped an armful of firewood upon the kitchen floor. Numerous other surprising and interesting experiments were used to illustrate points made in his lecture.

The program of the meeting was crowded with entertainment features provided by the local committee. On Tuesday afternoon an informal reception was held at the home of Mr. and Mrs. Ambrose Swasey, and in the evening there was a membership reunion at the Chamber of Commerce hall. On Wednesday afternoon tea was served at the Country Club, and on Thursday afternoon the members and guests enjoyed a lake ride on the steamer Eastland. In the evening there was a reception and dance at the Colonial Club. The ladies were taken through the parks in automobiles and were also afforded an opportunity of visiting one of the large cloak manufacturing plants.

Visits to Manufacturing Plants

Every opportunity was afforded the visitors to inspect the large manufacturing plants in the Cleveland district, ore docks with their ore-unloading and handling facilities, railroad terminals, etc. On Wednesday afternoon a large party visited the Newburgh works of the American Steel & Wire Co., while smaller parties were taken through the plants of the Brown Hoisting Machinery Co., National Acme Mfg. Co., Peerless Motor Car Co., Warner & Swasey Co., White automobile plant and the Winton Motor Carriage Co. Friday afternoon a large party went to Akron by special train and inspected the works of the Goodrich Rubber Co. and the Wellman-Seaver-Morgan Co.

Fiscal Year Changed

The National Enameling & Stamping Co. has decided to change its fiscal year, which now ends on June 30, so as to make it correspond with the calendar year. Dividends on preferred stock have been declared up to and including June 30 of this year. The directors have declared a further dividend for the last six months of the year at the rate of 7 per cent per annum, payable in two quarterly installments of 1¾ per cent each on September 30 and Dec. 31, 1912, so as to bring the dividend declared within operation of the changed period.

Safeguarding Machinery.—The Wisconsin Industrial Commission has promulgated a set of 30 orders to employers relating to the safeguarding of machinery and elevators, the result of six months of investigation by experts of the commission. This is the first set of rules issued by the new commission and more are to follow as the investigation proceeds. The orders were formulated by a special committee representing the Wisconsin Federation of Labor, the Merchants' and Manufacturers' Association, Wisconsin Manufacturers' Association, the Industrial Commission and other interests representing employer and employe.

Remain in Detroit.—The Cadillac Motor Car Co., Detroit, has purchased the plant of a small manufacturing company adjacent to its works. It is said that the company has no idea of removing from Detroit. Talk of such a move arose from dissatisfaction over poor railroad facilities, but this has been remedied.

The contract for the construction of a 15-story office building of John P. Starks, in Louisville, Ky., will be let from the offices of D. H. Burnham & Co., of Chicago. McDonald & Dodd, Louisville, will be the supervising architects. The plant will be of steel frame construction, and will have its own power plant.

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The Shortage of Labor

There is almost universal complaint in the iron and steel industry that it is very difficult to secure a sufficient supply of labor, and this is true not only of the foundries, rolling mills, steel works and blast furnaces, but of the coke works as well. Indeed, the scarcity of labor is particularly pronounced in the Connellsville coke region. Two questions arise: Why is there this scarcity, and how can it be remedied?

The scarcity is not, of course, in the iron and steel industry alone. A mill man in a small town was recently discussing his difficulty, and remarked that some large railroad operations were being conducted in the neighborhood, and men were equally scarce there. If either of these two employers should advance his rates, the men would flock to him from the other. He thought they could bid wages up on each other by 25 or 35 per cent, without increasing the total number available in the town at all. Accordingly they refrained from entering into that species of competition.

Before passing to a discussion of the question of labor shortage in general, it is well to observe that the iron and steel industry stands in different relation to the total of industrial activity in the United States than it did a decade or two ago. The sum total of iron and steel activity has increased much more rapidly than the entire industrial activity in the United States. Pig iron production has been doubling every decade and while, on account of improvements, the number of men does not increase with equal rapidity, although it does increase rapidly. Pig iron production today is at the rate of more than 29,000,000 tons annually, while the capacity is about 34,000,000 tons, and the actual output 20 years ago was only 9,000,000 tons. Steel production today is approximately double that of only ten years ago. Our population increases only about 20 per cent per decade.

The outcome of this disproportionately rapid growth in the iron and steel industry is that the industry constitutes a much larger proportion of the total activity of the country than it did even a decade ago. This makes it increasingly difficult for the labor supply to adjust itself to the ups and downs in iron and steel activity. When it becomes particularly active, it must find men, and the larger it is in proportion to the other industrial activities of the country, the more difficult it is for it to draw men. In five months, the steel works have increased their operations by about 30 per cent. Possibly this is no greater fluctuation than occurred in the more distant past, in point of percentage, but the number of additional men required for this 30 per cent increase is a much larger proportion of the total number of wage earners in the country than would have been the case for a 30 per cent increase ten years or 20 years ago.

Apart from this new situation of the iron and steel industry as compared with industry in general in the United States, there is a scarcity of labor in the country, as a whole, which is due to the great industrial activity elsewhere. In Italy and Poland, wages have risen very greatly in the past few years and elsewhere in Europe the advancing tendency has been pronounced. In South America, particularly in Argentina and Brazil, there has been a very great increase in industrial activity, and emigration from Europe is tending largely in that direction, instead of to the United States.

The continued advancing tendency in wages has been a marvel, and particularly so in the iron and steel industry, which is paying higher wages than ever before, although the general trend in its selling prices has been downward for five years. Repeatedly some old timers have arisen to suggest that wages must be reduced; that the general situation required a liquidation in this respect, but practical men have seen that nothing of the sort is possible. Particularly impractical at this time is the suggestion sometimes made that a three-shift day replace a two-shift day. Such a change, to be made at once, is not simply impossible from a business standpoint; it is a physical impossibility unless production be correspondingly curtailed.

Standardizing Metal Working Machinery

The cause of standardization of various matters referring to the metal working machinery industry was well served by the National Machine Tool Builders' Association at its recent semi-annual convention at Atlantic City. At that time, provision was made for the creation of a standardization commission in which will be vested the consideration of the question of standardization in all its aspects and the authority for taking representative action subject to the final approval of the manufacturers' association. This commission will represent every line of manufacture included in the so-called machine tool industry, so that its recommendations will be all-inclusive.

In the discussion of the question at the recent convention, reference was made to what the automobile industry has been able to accomplish in standardizing constructive parts. It is believed that the manufacturers of metal working machinery can equally realize much advantage to themselves by adopting a comparatively few as against the present numerous selections of parts in force in that industry and by working towards more uniformity in general design. The benefits to be expected to accrue from such action would be the more assured uniformity of quality and cheaper materials for the machinery builders. The manufacturers of materials by being able to confine their attention to a decreased assortment of given standards, should gain thereby greater output and lower production costs and be justified in scaling

present extras for special specifications. With fewer minor parts with which to work, the designing engineer would be enabled to give less divided attention to the development of the important distinctive features of machines. A theory that standardization of parts tends to destroy originality of design is refuted in the case of the automobile industry. Rather it would appear that it permits the application of more concentrated study and a wider exercise of ingenuity to the working essentials of a machine.

One of the important phases of the standardization effort concerns the clarifying of the nomenclature of the properly termed "machine tool" industry. What is a machine tool? is a question to which much attention has been given in an effort to define the limits of the term. The definition of a machine tool by the courts varies greatly from that commonly held by the metal working machinery industry. In a recent ruling, the courts declared a sewing machine was a machine tool. One prominent manufacturer, who has been giving the subject careful attention, simplifies the problem by declaring practically all machines are machine tools in that they are transformers of energy by means of a device called a tool. The only simple transformer of energy, he holds, is a power engine. In furtherance of a more accurate nomenclature, the machine tool builders are proposing to change the name of their association to the American Metal Working Machinery Constructors' Association.

All these efforts to standardize the metal working machinery industry in constructive detail and in terminology, represent steps toward changing a condition that has held forth urgent need of remedial action. The advances along these lines will be those of real progress.

Cost of Raw Materials

President Taft, recently in discussing the result of the dissolution of the Standard Oil and Tobacco trusts, declared that prices of raw material increased because competition had been restored. Is it considered desirable to increase the cost of raw materials? Would the dissolution of the Steel Corporation increase the price of iron ore and pig iron? If so, would that promote the public welfare? These are a few of the questions that we should like to have some of the friends of the dissolution policy answer.

Old Brutalities Made Prominent

In THE IRON TRADE REVIEW for May 9, an abstract was given of an extremely interesting article in *World's Work* for that month, by Arthur J. Eddy, on "The New Competition—The Open Price Policy," giving what the author believed to be a practical and legal way for the formation of associations of men engaged in the same industry, so they could publicly file all inquiries, bids and contracts and thereby establish much more satisfactory relations than exist at the present time. In *World's Work* for June, Mr. Eddy has a second article on "The New Competition," treating especially of ethics mitigating the old brutalities and showing how business men, courts, legislatures and the public are progressing toward harmony.

Mr. Eddy shows that the complaints concerning business methods rest principally upon two charges, namely:

(1) That a manufacturer or wholesale dealer, who finds a new competitor in a locality quoting low prices, meets the local competition without reducing his prices in other places.

(2) That a manufacturer or wholesale dealer makes special terms to the customers who will agree to buy exclusively from him.

"These things," says Mr. Eddy, "which have been done the world over from the beginning of trade, strike the popular orator as vicious and brutal only when done by some very unpopular corporation." The fact, however, that the practices complained of are old and universal does not make them fair and just. Mr. Eddy declares that they are brutal because they are human, and humanity in its struggle for existence is, and ever has been, brutal. In this assertion, we believe that Mr. Eddy strikes at the very root of the trouble. Until humanity is brought to a higher standard, attempts at reform in business methods are certain to be disappointing. But men are being trained to look at things in a better, broader way, and Mr. Eddy proceeds to show how this is being done. Big corporations, he says, have devised nothing new in brutal trade methods, but they have done things on such a large scale that the public is beginning to see and understand the unfairness and oppressiveness in common, every-day trade customs.

"The large corporation," says Mr. Eddy, "has been a wonderful magnifying mirror, in which the people for the first time see—themselves." The old idea of encouraging competition is passing, and whether it is right ethically or economically to encourage or permit competition that results in the ruin of any one is a question that is in process of solution. To show how far and how rapidly the country has drifted from the fundamental proposition of the old competition, Mr. Eddy quotes the terms of a decree, entered last October in the circuit court of the United States at Cleveland, in the case of the United States against the General Electric Co. and other makers of electric lamps. A significant feature of this case was that the defendants agreed to a decree which was satisfactory to the government and the court. Important features of this decree were that the defendants were enjoined from entering into any contract with dealers or consumers who buy certain improved filament lamps whereby such dealers or consumers must purchase all the ordinary filament lamps they need as a condition to obtaining the improved; and that defendants are enjoined from making any contracts with parties from whom they purchase supplies and machinery whereby such parties obligate themselves to sell to defendants at different prices than those at which they sell to other customers. The decree overturns the entire theory of the old competition, that a man has a right to sell his goods to whom he pleases, at the price he pleases, on the terms he pleases; it says that the seller must consider his rival.

Mr. Eddy expresses the opinion that the decree is crude in that it attempts too much and accomplishes too little. This is probably true, for it is a pioneer effort to establish more nearly just relations, not only between buyers and sellers, but also to prevent unfair competition among sellers themselves.

Mr. Eddy reviews some recent decisions, showing that a practice which is forbidden by decree of court in Ohio is a crime in Massachusetts and is legitimate business in Missouri. This article exhibits clearly some of the difficulties with which business men are confronted today. It emphasizes the importance of using every effort to improve business conditions without branding as a criminal any one who has not committed an act which, according to the conscience of the average man, is a crime.

MEN OF THE IRON TRADE

George R. Bliss Jr., treasurer of the O. C. White Co., Worcester, Mass., has returned from a European trip.

John Weise, superintendent of the boiler department of the Canada Foundry Co., Toronto, Can., has resigned to accept a similar position with the Gem City Boiler Works, Dayton, O.

Guy E. Tripp, chairman of the board of directors of the Westinghouse Electric & Mfg. Co., Pittsburgh, has been elected a director of the U. S. Mortgage & Trust Co., New York, to fill a vacancy.

O. G. Studt, formerly head draftsman of the Riverside Bridge Co., Martins Ferry, O., who resigned his position several weeks ago, is now identified with the American Bridge Co., at Pittsburgh.

Professors Sperr and Shubart and 25 students at the College of Mines, at Houghton, Mich., spent last week inspecting iron mines near Ishpeming, Mich. Sketches and measurements of the Baltic mine were made.

S. Rosenweig, chief engineer of the Erie Iron Works, Erie, Pa., spoke on "The Application of the Hugo Lentz Engine Principle to Steam Engines," at the last meeting of the St. Louis League of Electrical Interests.

E. P. Post has been appointed chief chemist of the Enameled Pipe & Engineering Co., Elyria, O. He was formerly an assistant instructor in the chemical department of the Carnegie Technical Institute, Pittsburgh.

Herbert Johnson, a member of the engineering force of the Oliver Iron Mining Co., at Ishpeming, Mich., has resigned. He will go to Iron River, where he has accepted a position with Pickands, Mather & Co., Cleveland.

J. C. Dufresne, formerly head of the speed and rate setting departments of the Providence Engineering Works, Providence, R. I., has resigned to become factory engineer for the Aurora Automatic Machinery Co., Aurora, Ill.

E. L. Byron is in charge of a new office opened in the south by the Bucyrus Co., South Milwaukee, at 1259 Brown-Marx building, Birmingham, Ala. He will have general charge of the company's sales in the southern states.

W. J. P. Moore, formerly sales manager for the Alberger Pump Co., New York, with offices in Pittsburgh, has been transfered to the New York office. He is succeeded in Pittsburgh by R. M. Hopkins, formerly of the New York office.

Sidney H. Wheelhouse, Pittsburgh representative of the Hooven, Owens & Rentschler Co., manufacturer of Hamilton Corliss engines, Hamilton, O., has returned from a business trip to the Pacific coast in the interest of his company.

F. H. Moses has been appointed general manager of the Adriance Machine Works, Brooklyn, N. Y., to succeed the late William C. Horn, who died on May 18. Mr. Moses has been connected with the Adriance company for 11 years.

James G. Medill, superintendent of La Belle plant of the American Sheet & Tin Plate Co., at Wheeling, W. Va., returned May 30, from a several months' vacation trip to Los Angeles, San Francisco and other points of interest in the west.

H. K. Annin has been appointed manager of the Elux Miniature Lamp Works of the General Electric Co., in New York City. Until recently he was engaged in commercial engineering work for the National Electric Lamp Association at Cleveland.

W. J. Richards, of Crystal Falls, Mich., general manager of mines for Corrigan, McKinney & Co., Cleveland, and John Erickson, superintendent for the firm, were in Spokane, Wash., recently. They also visited iron deposits in Stevens county, Wash.

L. A. Hawkins, of the research laboratory of the General Electric Co., Schenectady, N. Y., delivered an address at the annual meeting of the Armour Institute of Technology Alumni Association, in Chicago, on May 28. He spoke on "Industrial Research."

Allan Fraser has been appointed sales agent for the Buffalo district of the American Steel & Wire Co., succeeding William Henry Jennings, who resigned to accept a position as general sales manager of the tire department of the Diamond Rubber Co., Akron, O.

J. G. Garrard, who for several years has been superintendent of the Franklin Park Foundry Co., was appointed chief metallurgist for the Griffin Wheel Co., Chicago, on June 1. Mr. Garrard will have jurisdiction over all of the foundries of the Griffin Wheel Co.

Frederick A. Peiter, who has been assistant superintendent of construction for the Tennessee Coal, Iron & Railroad Co., at Corey, Ala., has been named assistant engineer for the H. Koppers Co., and will have supervision of all construction work of the latter company.

C. M. Schwab, president of the Bethlehem Steel Corporation, sailed for Europe May 30, on the French liner France. Mr. Schwab expressed himself as believing that underlying conditions in the steel trade were most favorable and that business was on a solid foundation.

Paul Llewllyn, for the last four years manager of the Cambridge, O., works of the Interstate Iron & Steel Co., recently transferred to the East Chicago, Ill., works of the company, was presented with a gold watch and chain by the employes of the plant when he left to assume new duties.

T. E. Hutchinson, president of the Pennsylvania Salt Co., Natrona, Pa., was the speaker at the semi-monthly meeting of the Pittsburgh Society of Steam Supplies Salesmen, held at the Colonial-Annex hotel last week. Mr. Hutchinson's subject was "The Salesman From the Buyer's Viewpoint."

George I. Keyes has resigned as manager of the Reed Foundry Co., Worcester, Mass., with which he has been connected since its organization 11 years ago. He plans to take a much-needed rest and vacation for the present. Mr. Keyes was formerly with the firm of Keyes & Woodbury, Worcester, Mass.

Julian Herndon and E. F. Hettrick, until recently connected with the Southern Ferry Concrete Co., have organized the Herndon-Hettrick Engineering Co., with offices in the Empire building, Birmingham, Ala. The company will make a specialty of designing and building reinforced concrete structures.

C. F. Rand, president of the Spanish-American Iron Co., a subsidiary

MEN OF THE IRON TRADE

of the Pennsylvania Steel Co., of New Jersey, has returned from Cuba, where he inspected the iron ore properties in which he is interested. Mr. Rand says reports of depredation by rebels on the island have been exaggerated considerably.

Emile A. Tordet, manager of the Italian branch of the Fenwick Freres & Co., of Paris, Turin, etc., is on a two months' business trip in this country, visiting the firms represented by his company in Italy. His address while in the United States will be in care of the Brown & Sharpe Mfg. Co., Providence, R. I.

James Craig, of the James Craig Engine & Machine Works, Jersey City, N. J., manufacturer of marine, gas and oil engines, has left for London, where he expects to remain about two months. He will study the latest European methods of Diesel engine practice, planning to manufacture this type of engine at a future time.

Walter H. Flynn, division master mechanic of the Michigan Central railroad, at St. Thomas, Ont., has been appointed superintendent of motive power, with offices at Detroit. He succeeds E. D. Bronner, promoted to general manager. E. R. Webb, division master mechanic at Michigan City, Ind., takes Mr. Flynn's position.

William H. Wood, foreman of the brass shop of the Pennsylvania lines west, read a paper on brass mixtures at the annual meeting of the Pittsburgh Foundrymen's Association held last Monday night, in the Oliver building. Mr. Wood had promised to give his paper at a previous meeting, but was prevented by a death in his family.

C. M. Blyer, general manager of the Hawley Down Draft Furnace Co., Easton, Pa., suffered a severe shock from a grounded electric wire, while working in his laboratory at his home in Easton a few weeks ago. As a result Mr. Blyer is not expected to resume his duties for several weeks. He is planning to leave shortly for his summer home in Michigan.

G. F. Parsons, pioneer engineer for the Worcester Electric Light Co., has resigned to take a position with C. D. Parker, Boston, as head of the power development sale department. He will be succeeded in Worcester by A. D. Putnam. Previous to coming to Worcester, Mr. Parsons was connected with the Woonsocket plant of Stone & Webster, Boston.

E. C. Fink, who recently resigned as director and assistant to the president of the J. Stevens Arms & Tool Co., Chicopee Falls, Mass., has been appointed assistant to the president of the International Motor Co., Broadway and Fifty-seventh street, New York. Before going to Chicopee Falls, where he remained five years, Mr. Fink was in the Boston office of the Prentiss Tool & Supply Co.

E. A. Stillman was elected president of the Watson-Stillman Co., 50 Church street, New York, at a recent meeting of directors of the company. A. F. Stillman was elected vice president and secretary; J. F. Bird, treasurer; Carl Wigtel, chief engineer, and Frank Lary, superintendent. A new branch office will be opened at Philadelphia in the near future and shop facilities are being improved to meet increasing business.

George A. Post, of the Standard Coupler Co., was elected president and a member of the board of governors of the Machinery Club of the City of New York, at the annual meeting last week. Others elected to four-year terms on the board are: C. B. Croak, of the Lidgerwood Mfg. Co.; F. W. Iredell, of the C. & G. Cooper Co.; W. B. Albright, of the Sherwin-Williams Co., and E. H. Benners, of the Crown Castings Co.

H. A. Strauss is president and chief engineer of the H. A. Strauss Co., Chicago, which recently succeeded the Falkenau Electrical Construction Co. The offices will remain in the Stock Exchange building, and the company will continue the practice of the former company as consulting, designing and supervising engineers as well as general contractors for waterworks, concrete bridges, foundations, electrical railways, power plants and hydro-electric systems.

W. H. Sherwin, northwestern representative for Joseph Ryerson & Son, Chicago, the last ten years, with headquarters at Minneapolis, has resigned his position to become general manager and vice president of the Alberta-American Ornamental Iron Co., Redcliffe, Alberta. This concern is the successor to the American Ornamental Iron & Steel Co., Minneapolis, which is moving its entire plant to Redcliffe, where it expects to add to its equipment in an effort to be in a position to handle the business of that rapidly developing country.

W. B. Patterson, assistant superintendent of the Marquette range mines, operated by the Breitung interests, has succeeded Joseph H. Hodgson as superintendent. Mr. Hodgson has taken charge of the Copper Queen Co.'s mines at Bisbee, Ariz. Mr. Patterson has been assistant to Mr. Hodgson the last two years and his work has indicated he is capable of managing the properties. Before becoming identified with the Breitung interests he was in charge of mining operations at the Empire property on the Cascade range. He is a graduate of the Michigan College of Mines.

J. F. MacEnulty has been appointed general sales manager of the Western Steel Car & Foundry Co., and the Pressed Steel Car Co., with offices in New York. When 20 years old he entered the employment of the Pressed Steel Car Co., at Pittsburgh, as an inspector, and later became foreman of the truck and bolster department, chief inspector and engineer of construction. He was transferred to New York as sales agent, and went to Chicago, about six years ago, as general superintendent of the Western Steel Car & Foundry Co., becoming general manager two years ago. The position which he now holds is a recently created one.

John W. Hill, mechanical engineer, has been appointed sales manager of the Bantam Anti-Friction Co., Bantam, Conn., and has resigned from the Brown & Sharpe Mfg. Co., Providence, R. I. Mr. Hill has the advantage of a wide experience as a mechanical engineer, having been connected with the Westinghouse Electric & Mfg. Co., the American Locomotive Co., and the General Electric Co. Several years ago he was associated with W. S. Rogers, president of the Bantam Anti-Friction Co., at the Watervliet Arsenal, and was directly engaged in the design of heavy machinery for building the big guns for coast defense purposes in the United States.

FAILURE OF MERGER

May Result in C. M. Schwab Becoming Interested.

At a meeting of the preferred and common stock holders of the Alabama Consolidated Coal & Iron Co. held at Baltimore last Friday, announcement was made by Joseph H. Hoadley, chairman of the corporation, that Charles M. Schwab had promised to become interested financially in the Alabama Consolidated and to reorganize the company provided the merger with the Southern Iron & Steel Co. does not go through, says a press dispatch from Baltimore.

Facts also developed at the meeting which tend to prove that the efforts of the committee appointed a year ago to merge the Alabama Consolidated Coal & Iron Co. and the Southern Iron & Steel Co. have proved fruitless. The entire plan will likely be dropped.

Mr. Hoadley read a copy of a letter written by Mr. Schwab to a member of the firm of Harvey Fisk & Sons of New York, which was to head the syndicate organized to take care of the underwriting under the merger plan. Mr. Schwab wrote that he was willing to become interested in the company provided its status remained as it is now and that he would aid Fisk & Sons in every way to work out some new financial plan for the corporation.

Mr. Hoadley also announced that Harvey Fisk & Sons were willing to expend $2,000,000 in refinancing the Alabama Consolidated in the event that it remained an independent company.

Receiver Appointed

Upon application of George H Cressler, a member of the Kerr Murray Mfg. Co., Ft. Wayne, Ind., manufacturer of gas making machinery, and gas holders, and doing a general foundry business, the Tri-State Loan & Trust Co. has been named receiver for the company and has been authorized to issue receivers' certificates to provide funds to meet current expenses and carry on the business until such time as a sale of the property as a whole can be made. Lack of ready cash to meet current bills or provide a sufficient working capital is given as the cause of the proceedings. The concern is capitalized at $300,000.

Work is now progressing on the erection of the new Milwaukee school of trades for boys, and it is expected that by Aug. 1 two wings of the structure, which will replace the building burned in December, 1909, will be completed and will be ready for use by Sept. 1. The new building will be three stories, of reinforced concrete, faced with brown brick, and will cost $210,000. Pattern-making, machinist and tool-making, carpentry and wood-working and plumbing and gas-fitting are taught in the school.

ORDER FOR MUCK-BAR

Leads Brooke Iron Co. to Put on Puddling Furnaces.

Reading, Pa., June 3.—The local industrial situation has been aided somewhat by the receipt of a good sized muck-bar order secured by the E. & G. Brooke Iron Co., Birdsboro, Pa. For five or more years this corporation's puddle mill has been making only sufficient muck-bar for its own use, the general market not calling for much, if any. To fill the order just received five more puddling furnaces have been put into service.

The shut-down of the sheet mill of the Reading Iron Co. for improvements and repairs, has taken puddlers and helpers from there to Birdsboro, and some of the furnaces just started at the local plant have been manned by them. It is said that there are good prospects for a lengthy run for the puddle department of the rolling mill. The other departments of scrapping process and sheet mill operation have orders on hand, the only present slackness being in the cut-nail factory which is idle this week.

Active Locomotive Buying

Motive power buying by the various railroad systems is holding up at a favorable rate and some contracts of considerable size are being closed. The Baldwin Locomotive Works has taken a contract for 50 locomotives for the Chicago, Burlington & Quincy, and one for 30 locomotives for the Pere Marquette system. The American Locomotive Co. has booked six six-wheel switching locomotives for the Chicago Junction railway, four ten-wheel locomotives for the Cuba Railroad Co., and one six-wheel switching locomotive for the Cambria Steel Co.

The discovery of a ledge of tin ore, 3,700 feet long by 12 feet wide in the Tanana Valley, Alaska, is reported, by C. F. Robinson, an assayer, who said he traced the ore ledge.

MAKE COMPLAINT

Against Bar Steel Freight Rate to Chicago From Bay View.

Complaint has been filed with the Interstate Commerce Commission by the Scully Steel & Iron Co., of Chicago, against the Chicago, Milwaukee & St. Paul, and Chicago, Burlington & Quincy railroads as to the unreasonableness of rates on bar steel between Bay View, Wis., and Oregon, Ill. The rate charged on carload shipments was 13½ cents, which the complainants charged should be reduced to 8 cents. The complaint declares:

Oregon is directly intermediate with Hazelhurst, Ill., on shipments moving from Bay View to Oregon over the defendant lines. They really, in their tariffs, prohibit the application of the rate which we should be charged; but disregarding how their tariff may read, it seems hardly proper for these lines to collect or assess a greater rate than 8 cents, which is the published rate on this same commodity between Bay View and Hazelhurst."

The complainants request the commission to order a reduction of the rate and to direct that reparation be made for damages sustained on account of the excessive charge.

Form Exploration Company

American and Canadian capitalists have formed the Canadian Mining & Exploration Co., Ltd., with a nominal capital of $5,000,000. Although the company will have an Ontario charter and its primary object will be the investigation and exploitation of Canadian mineral resources, other propositions will be entertained as they rise. The board of directors is comprised of the following: William E. Corey, E. C. Converse, R. A. Rockefeller, A. H. Wiggin, T. L. Chadbourne Jr., J. R. DeLamar, Ambrose Monell, C. H. Sabin, R. M. Thompson and C. L. Denison, of the United States, and Sir E. B. Osler, H. S. Holt, Sir Edmund Walker, Sir Edward Colluston, Sir William Mackenzie, Duncan Coolson, D. Lorne McGibobn, Hon. Wallace Nesbitt, K. C., David Fask, K. C., and P. J. McIntosh, of Canada. The executive committee will consist of Messrs. McGibbon, Nesbitt, Converse, Rockefeller, DeLamar, Monell and Sabin. Mr. Monell, who is president of the International Nickel Co., and the Dome mines, is also president of the newly formed company.

Millions Spent for Improving Labor Conditions

By the Steel Corporation and Damage Suits are Seldom Brought By Employes—Accidents Reduced 43 Per Cent in Six Years

In responding to the toast "Rendering Labor Safe in Mine and Mill," at the banquet of the American Iron and Steel Institute, in New York, May 17, Raynal C. Bolling, solicitor of the United States Steel Corporation, New York, said:

Mr. Chairman and Gentlemen:—At the very outset, I shall have to ask your indulgence. Among the many wise things I have heard Judge Gary say to you gentlemen, I remember once having heard him say that few men can make a good speech without thorough preparation. I am not one of those few and after two weeks of continuous appearance in court I have not had a chance for that preparation. So I can only come and talk to you out of the fullness of my heart and the depth of my interest in what is, after all, one of the by-products of my profession.

I feel some embarrassment even in doing that, because I stand here talking to you about things which other men are doing, and if there were more justice in the world the honor of talking to you would rest upon probably Mr. Crawford or Mr. Buffington or Mr. Olcott or Mr. Schiller, or some of the presidents of our subsidiary companies who are actually carrying out the work of accident prevention, sanitation and other betterments for workmen, of which I hope to tell you something this evening, and my only comfort lies in the recollection of something that one of the old writers said—I am sure Mayor Gaynor could tell you who it was, but I cannot—he said that perhaps the soldiers of Greece might not have been quite so famous if they had not had the writers of Greece to tell about them, and so I think perhaps these gentlemen who are doing these things might possibly not come to be quite so famous if they did not have me to tell about them. (Applause.)

There is one test of the sincerity of a business corporation in work of this kind which I think no one can deny. That test is an examination of its budget. When a business corporation takes millions of dollars annually and applies this money to improving the condition of its workmen, in advance of distributing dividends, it is pretty good evidence that its professions are sincere. This is one case in which financial details are not likely to be considered sordid.

So, with your permission, I will give you briefly the financial details of this work which the Steel Corporation is doing for the improvement of conditions among its workmen.

The accident relief for men injured and the families of men killed, which is paid in all cases regardless of legal liability and without the necessity even of application on the part of the injured man or his family, is costing each year approximately $2,000,000.

The accident prevention, in which I think we may claim to have as effective a system as exists in the United States and probably abroad, costs $750,000 per annum.

RAYNAL C. BOLLING

Sanitation and welfare work, in which Judge Gary will shudder to hear we have only made a good start, costs already a million and a quarter dollars annually.

The pension fund, providing for superannuated employes, costs, for the annual payments and for the payments necessary to establish the permanent fund, $700,000 per annum.

This is a total of $4,700,000 annually, which, with the items not specified, will easily reach an expenditure of $5,000,000 a year for improving conditions among workmen of the Corporation.

Interesting Details

There are a few of the details of that expenditure which may interest you.

It is just about six years since the Corporation sought to organize excellent work which the subsidiary companies had been doing previously in accident prevention. In these six years, we have established a system of accident prevention which an entirely disinterested and somewhat critical observer tells me has made the South Works of the Illinois Steel Co. the safest steel works in the world; I think I may add, in confidence, that one of the investigators of the United States government tells me that the accident prevention of the Steel Corporation is today more effective than that of Germany, and Germany has been our model for many years.

The results, in figures, show that in six years the number of serious and fatal accidents has been reduced 43 per cent, which, stated another way, means a saving from injury, serious injury or death, of approximately 2,000 men each year. That work costs something. It has cost since it was started about two and a half millions of dollars, but the interesting figure on the other side is what the saving has been. Taking the rate of accidents in 1906 and assuming, as I think we may fairly assume, that if this work had not been done the rate of accidents in 1911 would be as high as that of 1906, the saving each year of 2,000 men from serious or fatal injury, the money saving amounts to about $1,445,000. And over the period during which we have spent that two and a half million dollars in equipping mills with safety devices, the aggregate money saving in money which would have had to be applied in any manner of common decency to the relief of men injured and the families of men killed, has been $3,872,000; so that I think the accident relief has to its credit something like $1,300,000. Confidentially, we shall probably ask for this money later on for further betterments. (Laughter.)

The accident relief we have always classed as secondary to accident pre-

vention. It is called, in the language of the present statutes, workmen's compensation. We do not call it that, because we do not believe there is any compensation for a man who has lost an arm, or who has lost a leg. But we do the best we can by him regardless of whether the state laws demand it and long before any of the state laws did demand it, every man employed by the Steel Corporation was able to tell in advance just exactly what provision would be made for him or for his family in the event of accident, minor, serious or fatal. The best proof of what the men think about our accident relief is that, notwithstanding the pressure under which they are put by ambulance chasers—notwithstanding the fact that resort to the courts has been the long-established custom in this country—last year 85 per cent of our men accepted the accident relief plan, and of the total number of injured men, suit was brought by only two-thirds of 1 per cent. On this showing, I think we may claim that the men are satisfied. The cost per employe of total expenditures in the casualty departments was about $11 per annum.

Another item which shows a great change in that work is the proportion of the expenditure arising from accidents which goes directly to the injured men or their families. Investigations made by the New York commission showed that under the old system, under the system of insurance in employers' liability companies, anywhere from 30 to 40 per cent of the amount paid by the employer actually reached the injured man or his family. Our records for last year show that of the money we spent 79 per cent went directly to the injured men and their families.

One of the interesting items in the growth of this accident work and the spread of it over the world is the present movement to establish by co-operation a uniform danger signal which gentlemen representing us at the congress to be held this summer in Europe will present to that congress. If the movement succeeds, the time will come when all over the world, whether in Finland, in Armenia, in Bulgaria, in Pittsburgh or in South Chicago, one sign, without any lettering, will mean one thing—it will mean "danger"; and the amount of education necessary to teach the foreigner where he is likely to be hurt will be immensely decreased. We hope that will succeed.

Another thing which has made a great difference in the condition of the employes in the Steel Corporation is the extension to all its employes of the pension system which has been made possible through the decision on the part of the Corporation to add $8,000,000 to the $4,000,000 originally contributed by Mr. Carnegie. Out of this fund every man and woman who has served the Corporation for 20 years is assured an income sufficient at least for the necessities of his or her life after superannuation. Already 1,600 of these superannuated employes are being thus taken care of for the rest of their lives.

Perhaps the most complex of all these things is the question of welfare. It does not permit of the same ready standardization which can be applied to matters of safety. The proper guard for a punch is probably the same in Waukegan as it is in Pittsburgh, but the proper thing to be done in one of Mr. Crawford's mining camps would be entirely too paternal and too much of an interference with the independence of workmen in Pittsburgh.

The problems of sanitation admit of a little more standardization, perhaps a good deal more. The problems of welfare are much more complex and depend a great deal more upon the size and the situation of the community and the character of the workmen. The committee on sanitation is seeking now and has gone a good way toward establishing in all the companies the standard of sanitation maintained in the best plants. All the work of each company is being made familiar to every other company. And if any man has a problem in sanitation or in welfare, at any plant, the methods all over the country are put at his disposal, showing the results of anything of a similar kind attempted elsewhere.

Sanitation Expenditure

It might interest you to know some of the items which appeared on the budget of last year for sanitation and welfare. I will run them over hastily. One I notice was the provision for pure water, the installation in one of the plants of the National Tube Co. having cost $100,000. Another of these problems is sanitary disposal of sewage, in which the Frick Coke Co. spent last year something like $100,000. Drainage of stagnant water has become another source of concern. The enforcement of cleanliness and order, fencing, painting, cutting weeds and collecting garbage, are some of the details that have come under the consideration even of the presidents of the subsidiary companies. Wherever any of the companies are responsible for the food supplies of the communities, care has been given—better care than is given in many of the city markets—to the prevention of flies and the most approved plans of sanitation.

In a number of the companies—in fact, quite generally has this been done—they have installed shower baths and lockers. There is one swimming pool, or perhaps two, and I have the gratification of Mr. Farrell's assurance that he personally wishes to see a great many more of them.

At one of the plants of the American Bridge Co. they have tried a very interesting experiment by devoting a certain amount of unused land to the use of employes for vegetable gardening. The employes have been started in their work by the distribution of seeds, and today there is a considerable piece of land near Ambridge which looks like a very prosperous market garden.

Contributions to hospitals, churches, libraries and other philanthropic purposes appear in the budget. It is surprising how many companies report items for furnishing groceries and coal, and paying rent and insurance for employes who are ill or have been unfortunate—a work which goes on year after year, quietly, consistently and without advertising.

The social side of the life of the employe is often very greatly aided too by the local plant manager, who becomes a patron of picnics and of athletics and a general aid to all the social movements of the community in which the plant is situated. A number of companies are aiding in the support of musical clubs and similar organizations among their workmen.

Improvements in lighting and ventilation have been going on at a great many of the plants.

Mr. Lynch has maintained very successfully in one of his districts a school for teaching his employes some of the things necessary to advance them from the ranks of unskilled to skilled labor in the coal mines.

I have taken these items actually from the budget. Of course not all of them appear in all the companies and a great many are on trial merely at one plant. Undoubtedly many of them run the danger of perhaps a little approach toward paternalism, which the Steel Corporation has scrupulously and constantly avoided. I think we can probably depend upon

the attitude of the workmen to keep us fairly safe on these things.

In that connection, I am reminded of a story told me about one of the playgrounds established by the National Tube Co. at its plant, for children of the workmen. Mr. Close tells me that one morning a little girl appeared at the playground with very dirty hands and face and was told by the young woman in charge that she must tell her mother to wash her hands and face every morning. Next day she returned, but her hands and face indicated that she had paid more attention to them than had her mother. The young woman said, "Jennie, did you tell your mother what I told you?" "Yes, ma'am." "What did she say?" With some reluctance, Jennie answered, "She said you could go to hell." (Laughter and applause.)

That may be a mistaken attitude of independence, but it would be a much greater mistake to overlook, ignore or undermine that independence.

I feel that it is a peculiar privilege for a lawyer to talk on these questions to you gentlemen who have vastly more influence in the solution of the industrial problems of the country than the lawyers before the courts, the preachers in their pulpits, the teachers in the colleges or the doctors in the hospitals. To my mind the industrial problems of the country are the all-absorbing problems today.

The Dissolution Suit

The attorney general is reported to have said that the suit which the Steel Corporation is contesting with the government is the most important piece of litigation that has ever been presented to the courts of this country. I should certainly agree that it is the most important case that has been presented to the courts of this country since the Dred Scott decision. I do not believe that the initiative, referendum and recall are as permanently and vitally important as the questions with which you gentlemen have to deal; and every one of you, as employer of large numbers of men, are helping to shape not only the theories but the facts of your time.

It is a time of a very serious and wide-spread unrest. It seems to be a time when the burden of proof no longer lies with him who advocates change, but with him who defends the established order of things. There are influences enough at work to exaggerate the inequalities of conditions. There are influences enough seeking to misrepresent the minds and purposes of men, influences seeking to sow in the minds of the less fortunate distrust and hatred of the more fortunate. With you, gentlemen, lies the power and the opportunity to minimize the differences which fortune has made; to do away with the distrust which many forces are seeking to create and to establish in its place a confidence which this country now sorely needs. (Applause.)

TO CONTINUE OPERATIONS

Allis-Chalmers Receivers Will Keep on With Business.

(*Special Correspondence.*)

Milwaukee, June 4.—That the foreclosure of the $15,000,000 mortgage on Allis-Chalmers Co. by the Continental & Commercial Trust & Savings bank of Chicago, is only a mere incident, is the declaration of Otto H. Falk, president of the Falk Co., of Milwaukee, who, with D. W. Call, president of Allis-Chalmers Co., was recently appointed receiver of the company.

"The foreclosure of the $15,000,000 mortgage on Allis-Chalmers Co.," said Mr. Falk, "is the only thing that could be done. The mortgage will be foreclosed necessarily, since the bonds must be retired and the plant taken over by the reorganization committee. Common and preferred stock only will be issued, according to the new plan.

"This action will have no bearing whatsoever on the plants in Milwaukee and elsewhere. The business will continue to go on as before. In fact we have more business on our books now than for a long time. The May orders are fully 20 per cent larger than the orders for April, and April orders in turn surpassed March by 20 per cent. The price at which we are selling goods has not raised, as we must meet fierce competition in the line of goods that we handle. The prospects of the business this summer are of course unknown, but we look for the best."

The interest on the bonds of the company was not paid Jan. 1, 1912, and a reorganization was made later by which an assessment of practically $5,000,000 was levied on stock holders and the bonds were replaced by additional stock issues.

The Great Southern Iron & Development Co., Wedowee, Ala., has purchased 1,000 acres of iron ore deposits which will be actively worked. The company has issued $250,000 in bonds.

TARIFF BILL

Passed by the Senate—Will be Vetoed by President Taft.

The metal schedule of the Underwood tariff measure was passed by the senate on Memorial day. Only a little more than a quorum was present at the time of voting, the count showing 35 ayes against 22 nays. Many of the senators who opposed the radical revisions made by the bill were absent, it being understood that they have the assurance of President Taft that he will veto the measure.

The bill had previously been rushed through the house and will now go to conference between committees of the two branches and, as the senate made only slight changes, it is expected that an agreement will soon be reached and acquiesced in by both senate and house. It is then that the Republicans confidently expect President Taft to veto the measure, thus shutting off any tariff legislation during this session of congress.

Sixteen members of the "regular" Republicans were absent when the vote was taken and it was this fact that enabled the Democrats to pass the bill. Only one "insurgent" Republican, Senator Gronna of North Dakota, voted for the measure.

At the last minute, the senate adopted several amendments, including one placing a number of farm implements on the free list and others that repeal the Canadian reciprocity law, provide for a duty of $2 a ton on print paper, and reduce the duty on pig iron to 6 per cent and that on ferro-silicon to 10 per cent.

Senator Pomerene, of Ohio, provoked a sharp discussion when he introduced an amendment to take machine tools from the free list, as provided by the house, and fix a duty of 20 per cent. This amendment was voted down, 18 to 43.

The action of the "regular" Republicans in permitting the passage of the bill, makes the measure entirely a Democratic one and President Taft's veto is confidently expected for that reason.

Work Will Start Soon

Work will begin within the next few weeks on excavating and grading preparatory to the erection of the open-hearth furnaces and rolling mills of the Brier Hill Steel Co., Youngstown, O., if present plans materialize. In order to complete the work by fall, which will require the excavation of 100,000 cubic yards, night and day forces of laborers will be employed.

Discussion of the Corrosion of Iron and Steel

Presented at the Meeting of The American Iron and Steel Institute at New York, May 17, by L. J. Campbell, Youngstown Sheet & Tube Co.

Dr. Cushman has considered some half dozen specimens of iron which have resisted corrosion to a remarkable degree over periods of time ranging from one to fifteen centuries; he has presented the analyses of the specimens selected and called to your attention that the low carbon steel now being manufactured conform in some respects to these analyses. The examples cited by Dr. Cushman all consist of what we call today old-fashioned wrought or forged iron and your crossroads blacksmith will tell you that no iron or steel to compare with it in durability has yet been invented.

Puddled Iron

Dr. Cushman says that the specimens discussed by him represent all the extraordinary examples of corrosion resistance of which he has been able to make a record. If 25 to 50 years resistance to the corrosive influences of nature can be considered extraordinary in this day of short-lived steel products, many additional examples could be given. These consist of cases where puddled iron products have successfully resisted corrosion. Many a puddled iron roof is in existence today, after 30, 40 and even 50 years of service, apparently in as good condition as the day it was laid. Instances such as these and the ones Dr. Cushman cited present irrefutable facts and demonstrate conclusively that certain iron products have successfully withstood the service test.

There is, of course, a reason for this remarkable characteristic of iron. Experimentation would tend to show that the answer cannot be found in analysis alone. Indeed, I feel that altogether too much stress has been placed upon analysis at the expense of physical characteristics. Were chemical analysis the only guide of the diamond prospector, for example, the headquarters of the diamond industry would have long since been changed from South Africa to the anthracite coal fields of Pennsylvania. Wrought iron, which is the only iron or steel which we can demonstrate has actually resisted corrosion in a satisfactory manner, presents a characteristic and striking physical structure. It is fibrous, the iron fiber to a large extent being covered with a protective coating of slag, and many authorities hold that this slag coating protects the iron and gives it the resistance to corrosion which we all know it possesses. Again, iron in its manufacture is worked and kneaded so that it is possible that properties are imparted to it in this way that cannot be expected in steel which receives a dissimilar treatment. These points, and others, with reference to wrought iron should receive careful consideration in conjunction with analyses.

Accelerated Corrosion Tests

Dr. Cushman has mentioned that low carbon steel is being manufactured which conforms somewhat in analysis to the old style irons. As you are aware, much merit is claimed for these newer products. The basis of these claims consists of various accelerated tests, notably the action of sulphuric acid, which are taken by the experimentors as indicative of the metal's behavior in actual service. These accelerated tests have been so generally discredited and so strongly denounced that it would seem a waste of time to dwell upon them here were it not for the fact that they form the sole argument upon which merit claims are made by the manufacturers of these so-called open-hearth *irons* and non-corrosive metals. The American Sheet & Tin Plate Co., La Belle Iron Works, the Youngstown Sheet & Tube Co., and other well-known iron and steel companies have publicly gone on record as doubting the value of such tests. The American Society for Testing Materials has vigorously denied any belief in the value of the tests and in unmistakable phraseology calls "attention to its (the test's) utter inability to give a reliable indication of the relative ability of metals to withstand the corrosive action of exposure to the weather."

Opposed to Accelerated Test

Among the many expert investigators who condemn the accelerated corrosion test, none is more clear in his denunciation than Dr. Cushman himself.

In bulletin No. 35 of the office of public roads, issued by Dr. Cushman in May, 1909, he says:

It has been found that this pure steel (or iron) resists the attack of acids to a high degree, and an acid test has been proposed to pre-determine the resistance to corrosion of various types of metal. This proposal has, however, met with decided opposition from some metallurgists, who believe that the test is not a rational one. The need of a quick preliminary test for determining the resistance of steel and iron to corrosion is universally conceded. It is, however, in the opinion of the writer, extremely doubtful whether such a test is possible, in view of the fact that the auto-electrolysis which is slowly but continually at work in the natural process of rusting does not proceed in the same way in any short time test. This criticism applies to all the various tests which have been proposed, such as immersion in corrosive liquids while air is being bubbled over the test pieces. A considerable amount of work has already been done in investigating this particular problem, and the results have already been in part published in the *Transactions* of the American Society for Testing Materials. More work is being done and will soon be published. Up to the present time there would seem to be but one perfectly sure criterion, and that is the test of service.

Nearly two years later, March 20, 1911, he said:

I am in receipt of yours of March 18, in which you ask me whether my investigation work in regard to the preservation of iron and steel has developed since the publication of my bulletin 35, issued May 21, 1909. I have been continuing my studies of this subject along all possible lines, and in some respects there has, of course, been new information available since the publication of my bulletin. I do not know, however, that there are any of the conclusions that I had arrived at in bulletin 35 which I should wish to change at the present time.

Again in April, 1911, he said:

There is no question about it that manufacturers have worked this test overtime, and to a certain extent in a very unfair way.

Under date of March 3, 1911, in a report by the Institute of Industrial Research, on the efficiency of zinc coatings, Dr. Cushman again expressed his opinion of accelerated tests. He said:

Without the slightest dishonest intention or desire, every testing engineer or expert will find himself influenced by an impulse to make as good a showing as possible for his clients. Moreover, in case a technical discussion is going on, which has an important bearing upon industrial enterprise, an investigator will find himself almost obliged to take one side or the other. If he has, as the result of certain tests, formed a conclusion favorable or otherwise to a certain type or class of material, he will find

it difficult to avoid a bias which tends to set him in a certain direction. For this reason, purchasers should not allow themselves to be influenced by the showing made by a series of laboratory acceleration tests, that appear to claim that any one of the methods of zinc coating is much inferior to another. The general experience in service lasting over considerable periods of time and the accumulated tests made by a number of different investigators do not justify any such conclusion.

Corrosion of Ingot Iron

With claims for durability based upon such unstable ground, it should be interesting to know just how the new steels in question stand up in actual service. I have a piece of ingot iron which I placed on a window ledge a little less than a year ago. It was cut from a 14-gage sheet and the most friendly critic must admit that it has corroded to an alarming extent in its brief period of exposure.

I also have another piece of ingot iron which has an interesting history. On Nov. 16, 1909, James Hern & Co., Springfield, O., purchased a quantity of 18-gage ingot iron sheets, and in February, 1910, made them into a smokestack for the Ferncliff Floral Co., of the same city. The boiler of the Floral company is only in service during the cold weather, being used for heating purposes in a greenhouse, yet in October, 1911, the stack collapsed after **less than one year's actual service.** An analysis of the sample gave the following results:

Carbon, trace; sulphur, 0.010 per cent; manganese, trace; phosphorus, 0.007 per cent, and rust (Fe_2O_3), 30 per cent.

I have a third sample of material which is a specimen of puddled iron roofing which has seen 40 years of service on the warehouse of the Globe Foundry & Machine Works, at Niles, O. W. B. Carter, manager of the company, wrote with reference to the roof, under date of March 1, 1911, as follows:

In reply to your request for information regarding the old-fashioned iron roof on our warehouse, would say that the building was erected and the roof placed in 1871. I was then but 12 years old and remember quite distinctly of helping to give the roof its first coat of paint. The roof has received but two applications of paint, the second one between 20 and 25 years ago. No repairs have ever been made on the roof.

There is every reason to believe that this roof has many years of usefulness left. It is interesting to note that samples taken from this roof and subjected to the accelerated acid test make a miserable showing. In fact the old iron does not compare favorably with Bessemer steel when subjected to the acid test.

Light Roofing Material

A second point of interest in connection with the iron roofing, and I could give scores of examples of its durability, is that it is in nearly all cases made of light sheeting. This means that the surface area is very large in proportion to the total weight. With a nail or chisel the surface exposed to corroding influences is inconsiderable in comparison to the total weight while with sheets the reverse is true, which makes their excellent lasting qualities the more remarkable.

While the production of these so-called *irons* or metals has been a brilliant commercial success, I am not willing to admit it has been or should be considered a metallurgical triumph. As far as carbon and manganese are concerned a very pure steel can be made in the Bessemer converter, and the production of a somewhat purer metal by the open-hearth process hardly seems difficult of conception and once conceived certainly not difficult of execution at an extra cost of not to exceed two dollars per ton.

Greater Interest in Corrosion

Dr. Cushman has expressed the hope that a deeper interest may be taken in this subject of corrosion. I heartily second his wish. Particularly do I desire to lay emphasis upon the ethical rather than the technical side of the question. In my opinion too much effort has been expended, in this country at least, in trying to fit theories of corrosion to commercial practice. What I wish to make an urgent plea for is a comprehensive, broad-minded, unbiased investigation, free from commercialism, of the mechanism of corrosion. I speak frankly on this subject as I have no axe to grind. I am employed by the Youngstown Sheet & Tube Co. We manufacture puddled iron and Bessemer steel and are preparing to manufacture open-hearth steel. We have diversified our product because we recognize that no one material can be satisfactory for universal use and we are desirous of giving the consumer the material best adapted to his requirements.

Non-Corrosive Iron

Puddled iron, which is the most non-corrosive iron product now being manufactured, cannot be generally used. It is only possible to use it in a limited way and even if its physical properties would permit it to be used more widely its high cost and difficulty of production would render it impractical. A new material capable of general use is imperatively needed and search for it must not be abandoned, but vigorously prosecuted. The splendid achievements of the special steel makers in producing the high-grade alloy steels, tool steels and electric steels which are now on the market point the way in this no less important phase of the industry.

Engineers Visit Pittsburgh Plants

More than 200 representatives from the recent Congress of International Navigation were in Pittsburgh on Friday and Saturday of last week as the guests of the city and also of the steel manufacturers. Many of them were delegates from their governments in Europe and most of them prominent engineers in charge of public work in their own countries. The program of entertainment was very elaborate and pleasing to the engineering element of the delegation. The party was taken to Ambridge on a special train, where they spent three hours going over the extensive works of the American Bridge Co. and witnessed the launching of a new steel river barge of 350 tons capacity, which was built for the United States government. The delegation eagerly sought data concerning this new form of river craft construction, which they were freely given. On a river steamer, the delegation went to Woodlawn, where they saw the plant of the Jones & Laughlin Steel Co., and then traveled up the Ohio river to the National Tube Co.'s works, which face on the Monongahela river, and also the Carnegie Steel Co.'s works at Homestead. Booklets describing these works were distributed. On Friday evening a dinner was given at the Hotel Schenley. Among the delegates were: A. Brenzinger, of Esslingen, Germany; Prof. B. E. Timonoff, of St. Petersburg, Russia, and a number of others of equal prominence from Belgium, France, England, Austria. The engineering guests were particularly interested in the Lake Erie and Ohio river ship canal project, which they commended as certain to be successful. Saturday was spent in viewing other points of interest about Pittsburgh.

One Furnace Idle

Six out of seven blast furnaces of the Lackawanna Steel Co., Buffalo are now in operation and the open-hearth steel capacity and finishing mills are well engaged. The Bessemer plant, however, is not running to full capacity.

Pen Sketches of Witnesses at Steel Corporation Hearing

The witnesses who are appearing daily at the Custom House in New York to be examined as to their knowledge of the various points involved in the Steel Corporation dissolution suit, present perhaps as interesting a contrast of personalities as it is possible to find. By far the majority of them are men who already have established for themselves a name and fame known throughout the iron and steel industry, while all are placing their impress upon the history of that industry.

Topping Self-Reliant

One of the most interesting of the witnesses was John A. Topping. Mr. Topping is slender and well-groomed. He wears a well-trimmed moustache and a pair of gold pince-nez. Always self-possessed, alert and equal to the occasion, he is typical of the class of men known as hustlers. He came to the hearing clad in a carefully pressed brown striped suit. His tan shoes were carefully polished. He occupied the stand for the greater part of two days, during which time he was plied with a constant volley of questions concerning the so-called Gary dinners, the affairs of the Tennessee Coal, Iron & Railroad and Republic Iron & Steel companies and various other subjects. To these his replies always came quickly, crisply and to the point, colored more often than not with a sort of dry humor which riveted the attention of all in the room. They were always expressed in the choicest of English. Mr. Topping, however, appeared to be just a trifle bored and anxious to have his examination concluded.

Baackes a Bluff Witness

Another witness was Frank Baackes. Heavy-set, bluff and with a broad German accent, Mr. Baackes distinctly bears out his Teutonic origin. He was in attendance at the hearings for several days, waiting to be called to the stand. Occasionally he would become impatient and pace back and forth at the rear of the room. When he was finally called, he took his seat on the stand with the air of a man who is there to fight to the finish. He was asked who ordered the destruction of the wire rope pool and electrical wire pool papers. "I did," said Mr. Baackes, "I alone am responsible," and he thumped his chest with his hand to prove it. It may be said at this time that no one attempted to doubt his word.

Roberts Liked It

Percival Roberts Jr. offered his testimony as though he really enjoyed it. Mr. Roberts wears a moustache and a closely cropped, sandy beard. He never appeared at the hearings without his cane, and his clothes, of a dark blue material, were always carefully pressed. On the stand, he would sit with his legs crossed, generally swinging one foot up and down. His replies were always given in a deliberate manner, much in the way a man would dictate a letter to his stenographer; they were always given in the best grammar, and were always of considerable length. In fact, Mr. Roberts' tendency to make his replies as complete and comprehensive as possible was plainly a source of annoyance to Judge Dickinson, who desired only the usual short answers. After delivering himself of a lengthy statement, Mr. Roberts would generally raise his head with a jerk and proceed to examine the ornamentation on the ceiling, violently swinging his foot as he did so.

Stevenson, Interesting Character

John Stevenson Jr. proved to be by all odds the most interesting witness to appear at the hearings up to the present. Mr. Stevenson has a fine, clear-cut face and has the air of a man who forms his own opinion of things. His hair and moustache are gray and about his eyes are wrinkles and "crow's feet," which give him a look of unusual shrewdness. He was not used to the heat which then prevailed in New York, he explained, and so he continually mopped his face and neck with his handkerchief, while his examination was in progress, which was considerably over a day. When he took the stand on the second day, he warned the opposing counsel that they must finish with him in time to permit him to catch the 6 o'clock train, as he had notified his wife to that effect. His replies to an extended line of questioning were always characterized by a Scotch humor which caused much delight among his auditors, especially when he directed a shaft against one of the counsel who had imprudently left an opening. His chief care, however, seemed to be that the stenographer would take down his testimony correctly and he would frequently end a reply with, "Got that right now?" Occasionally he would hastily get up out of his chair and pour himself a drink from a water pitcher on a nearby stand. On the stand was a bottle which several times caught his eye. Finally he picked it up, drew the cork and smelled the contents, after which he again set it down, remarking, "Well, I'm satisfied now."

Reid Seemed Willing

Daniel G. Reid was another witness who, when he sat down on the stand, looked as though he were there to stay. Mr. Reid's usual pose was to sit well back in the chair, with one leg thrown up over the other and with his right arm leaning against Examiner Brown's desk. The left lapel of his coat was usually thrown back, thus enabling him to sit with his left thumb hooked in the armhole of his vest. From this point of vantage Mr. Reid would complacently view the opposing counsel and the various spectators. By his voice and general attitude, Mr. Reid's chief desire seemed to be to aid the government in its search for information. His memory very frequently deserted him, however, and on such occasions he would look extremely pained. Every once in a while, Mr. Reid would direct a searching glance over his vest front, trousers and his coat, flicking off a little imaginary dust here and there. When this operation was concluded, he would sink back satisfied in his chair with his left thumb again inserted in his vest.

Will Make Castings

The American Iron & Steel Mfg. Co. opened a foundry costing $25,000, on June 3, at Lebanon, Pa. The company expects to make all its castings up to 15 tons weight, in addition to brass castings and chilled rolls. The new structure is equipped with a 15-ton electric crane and molding machines of the latest patterns. The plant contains 18,000 square feet of floor space. The dimensions are 60 x 200 feet, in addition to a lean-to, 30 x 200 feet. The foundry was built on the general lines of the other buildings recently erected by the American company, and was necessitated by the growth of the business. It is intended to replace a very small foundry used by the firm for many years for similar purposes.

NEW TAX RULING

Brings Protest From Wisconsin Manufacturers.

Milwaukee, June 4.—A recent ruling of the Wisconsin tax commission regarding machinery has aroused the manufacturers of Milwaukee and Wisconsin. Up to this year all machinery has been taxed as personal property. Under the new ruling of the tax commission, machinery is to be assessed this year as real estate in cases where the company owns the building in which the equipment is located. Where the company rents its building, the machinery is to be assessed as personal property. The new assessment in Milwaukee is already being made under this new ruling.

Under the new ruling, the man who leases his building is money ahead of the man who has added to the wealth of the community by erecting his own building. The latter can only deduct the taxes on his machinery with that of other real estate from his income in preparing his statement. The man who leases a building has his machinery assessed as personal property and he can take his personal property receipt and turn it over in payment of his income tax, dollar for dollar.

Since the ruling became known, the Merchants' and Manufacturers' Association of Milwaukee has been deluged with inquiries from manufacturers of every class, protesting against the injustice. It is held by vaious attorneys to be unconstitutional and it is believed that the ruling will not stand in the courts.

Sheet Rates Unchanged

An order was issued last week by the Interstate Commerce Commission denying application of a number of railroads for authority to correct the minimum weight applicable on sheet iron or sheet steel (not planished or polished) and roofing iron, black or galvanized, plain or corrugated, straight or mixed carloads, from points in Buffalo-Erie-Pittsburgh territory to points in Virginia, North Carolina, South Carolina and Georgia to 36,000 pounds instead of 40,000 pounds. Sufficient justification for the reduction was not shown and the application was denied on this ground.

Companies Consolidated.—It is announced that the corporations heretofore known as Alberger Condenser Co., Alberger Pump Co. and Newburgh Ice Machine & Engine Co. have been consolidated under one management in a new corporation under the laws of the state of New York to be known as the Alberger Pump & Condenser Co., with offices at 140 Cedar street, New York City.

LABOR SCARCITY ACUTE

Shortage of Help Curtails Production at Some Mills.

Scarcity of labor has become so acute in the Pittsburgh territory, that mills are now compelled at times to curtail production because of the inability to secure crews of skilled labor as well as common labor. The same situation continues in the Connellsville coke regions, where there is not only a scarcity of labor, but such labor as is now available, owing to the warmer weather, shows less disposition to work steadily, and the average foreign workman does not appear to care for more than four or four and a half days' real work a week.

The blast furnace interests are also complaining of a shortage of common labor, and are confronted with the excessive prices being paid by contractors with public improvements under way who are now paying as high as 22½ cents an hour in Pittsburgh, and are unable to get the number of men they need. Nearly all the sheet and tin plate mills are reporting a severe handicap from lack of both skilled and unskilled labor.

Will Build Coke Ovens

The Kentucky Solvay Coke Co. was incorporated recently at Ashland, Ky., with a capital stock of $650,000. The enterprise was planned and promoted by Eaton, Rhodes & Co., pig iron, coal and coke brokers, of Cincinnati. It was decided to proceed at once with the building of coke ovens planned near Ashland, Ky., to have a coking capacity of about 1,000 tons of coal per day. The Semet-Solvay Co., of Syracuse, N. Y., has contracted to build the plant. In addition to coke, the usual by-products of coal will be manufactured. Coking coals from the field of western Kentucky and the West Virginia fields will be used and a good portion of the output of coke will be shipped to a number of blast furnaces near Ashland. The following officers and directors were elected: President, R. G. Hazard; vice president and general manager, E. C. Witherby; secretary and treasurer, J. G. Hazard. Directors, John Russell, W. B. Seaton, W. G. Eaton, F. R. Hazard, E. L. Pierce and H. H. S. Handy.

OBITUARIES

Milo Barnum Richardson, president of the Barnum Richardson Co., Lime Rock, Conn., died at his home in that city on May 17.

William C. Horn, general manager of the Adriance Machine Works, Brooklyn, died recently after an eight weeks' illness. He was 43 years old and had been with the Adriance company for 25 years, working his way up through the various departments.

William Henry Denny Totten, one of the founders of the old firm of Totten & Co., which operated the old Fulton foundry, died in Pittsburgh on Friday at the age of 76. He was born in Pittsburgh, and was graduated from Washington and Jefferson college. He was in the foundry business for 25 years when he retired.

M. L. Sternberger, president of the Wellston Iron & Steel Co., Wellston, O., and for many years a prominent factor in the Cincinnati financial circles, died at his home in Jackson, O., June 2, after a long illness. Besides his interests in the Wellston company Mr. Sternberger was connected with the Superior Portland Cement Co. at Ironton, O., and was president of the Commercial Bank at Jackson. He also was president of the Cincinnati, Dayton & Lebanon railroad.

James Stewart Andrews, vice president of the Blair Engineering Co., 17 Battery place, New York, died suddenly at the Hollenden hotel, Cleveland, May 22. Death was due to heart disease. In 1907, he entered the railway supply business, under the tutelage of Harry W. Frost, in the service of the Monarch Brake Beam Co. Four years later, Mr. Andrews became associated with Albert Waycott in the Waycott-Andrews Co., St. Louis, Mo. A year later he helped organize the Commonwealth Steel Co., of the same city, of which he became vice president. Mr. Andrews retired temporarily when the company was acquired by Clarence H. Howard and his associates. In the meantime, Mr. Andrews had developed and patented the Andrews' side frame which he sold the American Steel Foundries, New York, in 1906, when he entered the sales department of that company. Mr. Andrews was born April 9, 1864, at Coleraine, Ireland.

The production of copper in the Butte camp for May was 29,082,362 pounds, compared with 28,929,040 pounds in April and 20,791,460 in May, 1911.

The Eight Hour Bill Has Passed the Senate

And is Sent to Conference Committee—May Work Nine Hours, if Saturday Half Holiday is Granted

By a vote of 45 to 11 the United States senate, on May 31, passed the eight-hour labor bill, which passed the House two months ago. It affects several thousand laborers employed on government work.

There is scarcely any doubt about an agreement being reached between the house and senate conferees and the bill being sent to the president for his approval, but many important measures, to which there is strong opposition—as in the case of the labor bill, have been smothered in conference at this stage of the session.

The bill, which goes into effect Jan. 1, 1913, provides that "every contract hereafter made to which the United States, any territory or the District of Columbia is a party, and every such contract made on behalf of the United States or any territory or the District of Columbia, which may require or involve the employment of laborers or mechanics, shall contain a provision that no laborer or mechanic doing any part of the work contemplated by the contract, in the employ of any contractor, sub-contractor, contracting for any part of said work contemplated, shall be required to work more than eight hours in any one calendar day, upon such work." (There is nothing in the bill forbidding the laborer to work longer of his own volition.) Some of the more important features of the bill follow:

"Every such contract shall stipulate a penalty for each violation of such provision in such contract of $5 for each laborer or mechanic for every calendar day for each laborer in which he shall be required to labor more than eight hours upon such work; and any officer or person designated as inspector of the work to be performed under such contract, or to aid in the enforcing the fulfillment thereof, shall, upon investigation or observation, forthwith report to the proper officer of the United States, or of any territory or of the District of Columbia, all violations of the provisions of this act directed to be made in every contract, together with the name of every each laborer or mechanic who has been required to labor in violation of such stipulation and the day of such violation, and the amount of the penalties imposed according to the stipulation in any such contract shall be directed to be withheld for the use and benefit of the United States, the District of Columbia, or the territory contracting by the officer or person whose duty it shall be to approve the payment of the moneys due under such contract, whether the violation of the provisions of such contract is by the contractor or any sub-contractor. Any contractor or sub-contractor aggrieved by the withholding of any penalty as hereinbefore provided shall have the right within six months thereafter to appeal to the head of the department making the contract on behalf of the United States or the territory, and in the case of a contract made by the District of Columbia to the commissioners thereof, who shall have power to review the action imposing the penalty, and in all such appeals from such final order whereby a contractor or subcontractor may be aggrieved by the imposition of the penalty hereinbefore provided such contractor or subcontractor may within six months after decision by such head of a department or the commissioners of the District of Columbia file a claim in the court of claims, which shall have jurisdiction to hear and decide the matter in like manner as in other cases before said court.

As to Half Holidays

"Provided, That if a Saturday half holiday is given to laborers and mechanics engaged on such work, an employment thereon of not more than 48 hours per week of work days of not more than 9 hours each shall be deemed a compliance with the provisions of this act.

"That nothing in this act shall apply to contracts for transportation by land or water or for the transmission of intelligence, or for the purchase of supplies by the government whether manufactured to conform to particular specifications or not or for such materials or articles as usually may be bought in open market, except armor plate and armor, whether made to conform to particular specifications or not. Provided, that all classes of work which have been, are now, or may hereafter be performed by the government shall, when done by contract, by individuals, firms, or corporations for or on behalf of the United States or any of the territories or the District of Columbia, be performed in accordance with the terms and provisions of this act. The president, by executive order, may waive the provisions and stipulations in this act as to any specific contract or contracts during time of war or a time when war is imminent. No penalities shall be imposed for any violation of such provision in such contract due to any extraordinary event of manufacture, or any emergency caused by fire, flood, famine, or danger to life or to property, or by any other extraordinary event or condition on account of which the president shall declare the violation to have been excusable. Nothing in this act shall be construed to repeal or modify the act entitled 'An Act relating to the limitation of the hours of labor of daily service of laborers and mechanics employed upon the public works of the United States and the District of Columbia,' being chapter 353 of the laws of the 52d congress approved Aug. 1, 1892, or to apply to contracts which have been or may be entered into under the provisions of appropriation acts approved prior to the passage of this act, or to work done under contracts made prior to the passage of this act.

"Sec. 4. The provisions of an act entitled 'An act relating to the limitations of the hours of daily service of laborers and mechanics employed upon the public works of the United States and of the District of Columbia,' approved Aug. 1, 1892, and of an act entitled 'An act making appropriations to supply urgent deficiencies in the appropriations for the fiscal year ending June 30, 1906, and for prior years, and for other purposes approved Feb. 27, 1906, shall not apply to unskilled alien laborers and to the foremen and superintendents of such laborers employed in the construction of the Isthmian canal within the Canal Zone.'"

Locomotives Ordered.—The Frisco system announces that on May 29 it placed orders with the American Locomotive Co. for 24 simple Mikado freight locomotives for the Chicago & Eastern Illinois railroad and 40 simple consolidation locomotives for the St. Louis & San Francisco railway.

April Makes Record for Iron and Steel Exports

United States Getting Near the Level of England and Germany—Low Prices Have Been an Important Factor

April broke all records in exports of the tonnage lines of iron and steel by a remarkably wide margin, the best previous record for a month having been 228,501 gross tons, made in April, 1911, while April of this year showed no less than 267,312 tons, a gain of 38,811 tons, or 17 per cent.

The April exports were at the remarkable rate of 3,300,000 tons a year, whereas the heaviest exports in a calendar year have been 2,187,809 tons, in 1911. Our export business is now rapidly approaching the level of England and Germany, which in recent years have had exports generally running from 4,000,000 to 5,000,000 tons each. In our own industry we have had to be content with seeing large percentage increases, without the total placing our industry in the class. With a few more gains such as occurred in April, however, we may actually pass the other countries.

It is by no means surprising that our exports should be very large in the industrial conditions which have prevailed in recent months, for it has been a fact that in a number of products our prices at mill have actually been lower than the foreign products at mill, and, given equal facilities for reaching the export markets, our exports should easily be very large.

An interesting feature of the heavy export movement in April is that it was not made in the products in which we used to have considerable export trade. In the late nineties, for instance, we had heavy exports of pig iron for a while, but our pig iron exports in April last were only 29,904 tons, relatively insignificant. Again, in making our record of 2,187,809 tons exported in the calendar year 1911, rails amounted to 420,874 tons, or an average of 35,000 tons a month, while our rail exports last April were practically no more, being 35,887 tons. Billets and sheet bars, of which we had large exports at times years ago, when our exports of finished products were small, amounted to only 24,101 tons last April, showing an actual decrease, as did rails, from April, 1911.

The heavy lines of export, and the ones which were responsible for last April making a new high record, were steel bars, structural material, sheets and plates and pipes and fittings. By reference to the table of details, it will be seen that in all these items large gains were made from April, 1911, to April, 1912, and the fact is particularly noteworthy considering that until last April, the April of 1911 held the high record for a month's exports.

By reason of the heavy tonnage exports in April, the month made also a new record in the total value of all exports, this value including that of hardware, cutlery, machinery, etc., the weight of which is not returned in the government figures. The total value of all iron and steel exports in April, not including agricultural implements, which were valued at $4,130,023, was $26,789,853, the previous high month having been April, 1911, with $24,916,912.

Iron and steel imports were small in

IRON AND STEEL EXPORTS, GROSS TONS.

	April		Ten months.	
	1911.	1912.	1911.	1912.
Scrap	10,054	7,416	43,413	64,523
Pig iron	12,188	29,904	138,790	130,709
Billets, sheets, bars, etc.	27,417	24,101	146,198	174,511
Wire rods	1,651	6,894	14,805	35,958
Rails	54,182	35,887	322,257	308,920
Steel bars	9,239	17,038	100,104	115,402
Iron bars	1,520	1,373	15,218	11,739
Structural	19,426	22,297	137,881	196,397
Hoop, band and scroll	*	638	*	6,203
Sh'ts & plates	33,433	47,599	247,829	363,585
Tin plate	6,125	11,000	22,487	61,758
Barb wire	6,782	6,813	67,484	84,572
All other wire	14,687	15,900	89,994	111,530
Cut nails	779	721	8,457	8,692
Wire nails	6,289	10,065	43,637	52,424
All other, including tacks	1,668	846	10,053	10,422
Pipes and fittings	22,762	28,622	149,537	187,945
Cast radiators, etc.	279	194	3,180	3,556
Totals	228,501	267,312	1,561,294	1,928,846

*Not separately stated prior to July 1, 1911.

IRON AND STEEL IMPORTS, GROSS TONS.

	April		Ten months, ending April.	
	1911.	1912.	1911.	1912.
Scrap	1,591	1,403	21,595	9,834
Pig iron	15,730	4,683	174,822	92,920
Blooms, billets and steel n. e. s.	1,649	2,462	34,163	20,069
Wire rods	1,423	1,261	15,400	11,783
Rails	*	60	*	2,381
Bar iron	1,236	1,795	25,284	19,056
Structural	*	201	*	2,661
Sheet and plates	216	491	3,257	2,226
Tin plates	547	126	38,675	2,688
Totals	22,392	12,482	313,196	163,918

*Not separately stated prior to July 1, 1911.

IMPORTS BY MONTHS.

	1910.	1911.	1912.
January	56,207	33,071	20,038
February	43,613	20,812	11,622
March	54,176	23,533	15,466
April	47,698	22,392	12,482
May	42,569	23,376	.....
June	30,322	29,395	.....
July	41,933	15,782	.....
August	36,879	19,943	.....
September	30,961	14,039	.....
October	31,455	21,035	.....
November	40,585	13,878	.....
December	31,575	19,665	.....
Totals	487,973	256,903	59,578

IRON ORE IMPORTS BY COUNTRIES.

	April, 1912.	Ten months.
Spain	.....	154,686
Sweden	54,032	238,258
Canada	50	29,828
Newfoundland and Labrador	.....	140,443
Cuba	123,670	1,047,429
Other countries	750	19,002
Totals	178,502	1,629,646

IRON ORE IMPORTS, BY MONTHS.

	1909.	1910.	1911.	1912.
January	105,233	284,823	102,600	154,118
February	61,749	170,427	94,823	129,693
March	108,676	163,633	134,785	157,469
April	74,782	236,135	133,900	178,502
May	97,393	240,833	217,467	.....
June	124,714	193,415	118,296	.....
July	172,316	248,810	200,845	.....
August	209,855	282,949	175,183	.....
September	164,613	208,892	184,456	.....
October	178,051	219,571	172,459	.....
November	174,966	197,833	128,019	.....
December	222,609	173,713	148,902	.....
Totals	1,694,957	2,591,031	1,811,732	619,782

VALUE OF IRON AND STEEL EXPORTS—TONNAGE AND NON-TONNAGE.

	1908.	1909.	1910.	1911.	1912.
January	$ 13,468,058	$ 10,329,388	$ 14,513,394	$ 18,739,961	$ 18,451,914
February	14,063,559	10,947,159	13,949,082	18,690,792	21,801,570
March	15,168,155	13,874,461	17,258,503	22,591,991	24,474,799
April	15,455,319	13,058,054	16,529,254	24,916,912	26,789,853
May	11,281,415	12,993,197	17,658,042	20,616,795	.....
June	11,677,944	13,779,736	16,503,204	20,310,053	.....
July	12,085,951	11,866,772	16,108,132	18,052,337	.....
August	12,058,561	14,136,219	17,628,538	20,704,154	.....
September	11,221,799	12,966,908	16,776,178	20,534,139	.....
October	11,535,063	14,249,598	17,452,085	20,799,591	.....
November	10,895,549	14,434,600	18,593,806	21,547,379	.....
December	12,231,741	15,075,183	18,300,710	22,186,996	.....
Totals	$151,113,114	$147,680,331	$201,271,903	$249,656,411	$91,518,136

EXPORTS OF TONNAGE LINES—GROSS TONS.

	1908.	1909.	1910.	1911.	1912.
January	74,353	70,089	118,652	152,360	151,208
February	81,773	84,860	110,224	150,919	204,972
March	96,681	94,522	124,980	216,360	218,699
April	93,285	100,904	117,921	228,501	267,312
May	64,341	109,977	135,306	178,428	.....
June	69,770	114,724	120,601	174,248	.....
July	86,796	100,680	128,216	162,929	.....
August	86,244	135,694	131,391	177,930	.....
September	76,732	97,392	119,155	181,086	.....
October	85,766	110,821	129,828	186,234	.....
November	71,130	115,943	155,138	187,541	.....
December	77,659	137,688	150,102	190,938	.....
Totals	964,242	1,243,467	1,537,943	2,187,809	842,182

April, amounting to only 12,482 gross tons, which is far below the average of more than 40,000 tons a month in 1910 and more than 20,000 tons a month in 1911. There have been decreases all along the line, but the most interesting was that in "pig iron", which averaged over 12,000 tons per month in 1911, but amounted to only 4,683 tons last April. Ferro-manganese, ferro-silicon, etc., are included in the government presentation as "pig iron" and it is probable that the decrease in April was largely in ferro-manganese. The tin plate imports in April were extremely small, being only 126 tons, but that has become an old story, as heavy tin plate imports suddenly stopped early in 1911. To show the reversal, however, it may be observed that in 1910 we imported 66,640 gross tons of tin plate, and exported only 12,445 tons, whereas in April we imported only 126 tons, but exported 11,000 tons. Comparing the rate in 1910 with the April showing, our exports were multiplied by 11, while our imports were divided by 45.

Ore Imports Larger

Iron ore imports in April were the largest since last September, amounting to 178,502 tons, chiefly from Cuba. There were none in the month from Newfoundland and Labrador, or from Spain. The details of the movement are shown in the tables, indicating the sources of the imports in April and the ten-month period ending April, and also the monthly totals from the beginning of 1909.

Building Plant

The Capital Wire Cloth & Mfg. Co., Ltd., advises that its plant in Ottawa, Can., is being erected and it expects to occupy it about July 1. It is the plan of the company to be turning out its finished product, consisting of Fourdrinier wires and paper mill wire cloth of every description, about July 20. The output will be for the Canadian trade. The building is to be of silicate brick construction, two-stories, and 42 x 100 feet and large enough to accommodate twelve looms. The building will have a blind end so that it can be conveniently added to as the occasion demands. The company has the following officers: President, J. R. Buchanan; vice president, Frank Haefs; secretary and treasurer, J. W. Perazzo; superintendent, M. L. Peebles. They, with William Buchanan, constitute the directorate also. All members of the company have been connected with the Appleton Wire Wks., Appleton, Wis., for periods ranging from five to sixteen years. William Buchanan is general manager of the latter concern.

LOW GRADE ORE

Will be Mined, Concentrated and Sintered for Blast Furnace.

By Kirby Thomas

To mine iron ore which yields less than 20 per cent iron is a low grade record for American practice and is also noteworthy as being in effect an important step in practical conservation. This is the proposition which the Safe Harbor Iron & Steel Co., of 42 New street, New York, has committed itself to after extended and competent technical investigations. The Martic iron property recently acquired and explored is in south central Pennsylvania about 7 miles from Lancaster, on Pequea creek.

The ore deposit consists of a hornblendic schist overlying limestone and traceable for more than 2½ miles. The schist is impregnated with finely divided magnetite, the latter occurring in more or less regular bands, but none of the rock is entirely barren of magnetite. The magnetite shows for a great width throughout the entire length of the formation, but at the point where mining has been done, there seems to have been a narrowing of the belt by lateral squeezing, uniting the various bands into a workable width to about 175 to 225 feet. Quarries have been opened on the property proving the continuity of the deposit for at least 1,000 feet along the strike, and outcrops both east and west of the quarries show the same formation; hence the presumption is that the ore will be found to be continuous.

A diamond drill hole piercing the formation nearly at right angles to the dip (55 degrees) shows 225 feet of workable width, and a churn drill hole proves that the ore body extends to at least 300 feet depth, at which point the drill passed out of the ore body into the footwall. Thus the indicated ore tonnage above the 300 foot level is 7,000,000 tons approximately in the immediate neighborhood of the quarries with possibilities of much greater tonnage in depth and in the lateral extensions.

The ore is very low grade, requiring not less than three and possibly four tons of rock to make one ton of concentrate, but there are compensating factors. The nature of the formation makes mining cheap, and the texture of the rock is such that crushing and pulverizing are very easy. The tonnage that a given plant can handle is much in excess of the output of the same plant running on ordinary ore, so that the leanness of the rock is counterbalanced by the lessened cost of milling. The concentrate produced can be brought up to 65 to 69 per cent metallic iron and is low in sulphur (0.004 per cent) and phosphorus (0.018 per cent) making a desirable product.

The plant now installed consists of a coarse crushing plant (jaw crushers) having a daily capacity of 800 tons and a finishing mill in which the product is further reduced by gyratories to 1-inch to 1½-inch size, after which a ring roll mill is used to crush to 14 mesh. This product, passed over a magnetic separator, using a strong magnetic field, is divided into a 60 per cent tailing, carrying practically no magnetite, and a 40 per cent concentrate containing 60 to 65 per cent magnetite. This first concentrate is then screened to 40 mesh and the oversize reground, all to pass 40 mesh, after which a second magnetic separator will remove the fine magnetite, giving a tailing which carries over ½ per cent magnetite. The concentrates assay upwards of 60 per cent iron and will be sintered.

The process of sintering is of recent development and tests made on the Dwight-Lloyd and Greenawalt machines show conclusively that fine magnetic concentrates are readily converted into a sponge-like cellular mass very suitable for the blast furnace charge and as the fuel is refuse coke braize or bituminous fines and not over 4 per cent fuel is required, the cost of the operation should not exceed 40 to 50 cents per ton. This iron sinter commands a premium over a crude ore of equal analysis owing to its superior smelting qualities.

The plant is provided with Berry safety boilers, Westinghouse vertical engine (500 horsepower) dynamos for magnetic separators and lighting and the buildings are ample to permit the installation of additional machinery to bring the daily capacity to 1,000 tons per day. The company owns a standard gage railway connecting with the Pennsylvania railroad at Safe Harbor, 4 miles from the mill.

Tests made upon the mill tailings show that they contain enough free silica to make them suitable for the manufacture of sand-lime brick and bricks made therefrom possess a smooth, sparkling surface which rendered them desirable for face brick and interior finish. They are dark gray in color, matching well with granite trimmings or other colored brick and will command high prices.

Experiments with electric smelting of the product have been made with promising results.

Iron and Steel Securities

There was a severe break in prices on the stock exchange last week, the change following days of uncertainty. Irregular variations were in evidence during the first part of the week, with the market dull and dragging. On Friday, there was a sharp decline and the majority of the stocks closed lower for the week.

Monday, sales were few and the general tone of the market was heavy. Grain market was higher on unfavorable crop reports from Kansas, while cotton declined on more favorable estimates of condition. Tuesday was the dullest day in three months, sales reaching only 143,000 shares. Foreign markets also dull, but there was a firm undertone both at home and abroad. Wednesday, the market was active and irregular. Prices opened firm, but broke two or three points, partially recovering before the close. Thursday, market closed for observance of Memorial day. Foreign money markets firm, but rate unchanged. Friday, stocks broke one to six points. Market closed weak at the lowest. Copper advanced to 17 cents, the highest in years. Crop reports were favorable. Saturday, stocks sold off in the earlier dealings but rallied one to two points and closed firm. Money on call ranged between 3 and 2¼ per cent. Time money was not especially active. The actual condition of clearing house institutions showed loans decreased $767,000; net deposits increased $1,635,000; total reserve $453,506,100, and the excess of reserve $25,506,100, a decrease of $950,050. Non-member banks and trust companies showed loans decreased $2,421,800; net deposits increased $628,700; reserve on deposits decreased $1,026,200, and the percentage of reserve 19, against 19.1 the week previous. Bank clearings showed a decrease of 13.2 per cent from the preceding week and a decrease of 6.2 per cent over the corresponding week last year. Fortnightly railroad statistics showed an idle car surplus of 116,201, a decrease of 13,897 from the preceding fortnight. Commercial failures numbered 205, compared with 241 the preceding week and 208 the corresponding week last year. Shares were sold to the number of 1,840,700, compared with 2,247,780 the preceding week and 2,946,000 the corresponding week a year ago. Bonds, exclusive of government bonds, were sold to the amount of $8,654,000, compared with $12,374,000 the preceding week and $18,298,000 the corresponding week a year ago.

	Clos'g Quo. June 1	Changes in week.	Annual Meeting date 1912	Stock Outstanding	Basis.	Dividend—Last Dividend	Dividend—Date Last Div. Pay
Allis-Chalmers	7⅛	— ⅛		$19,820,000		.....	.
Allis-Chalmers, pr.	23¼	— ¾		16,050,000	7 cum.	1¾ Q.	Feb., 1904
American Can	35⅛	—4½	Feb. 6	41,233,300		.....	
American Can, pr.	116⅜	—1⅜		41,233,300	7 cum.	1¾ Q.	July, 1912
Am. Car & Fdy	57⅞	—1⅛	June 27	30,000,000	2	½ Q.	Apr., 1912
Am. Car & Fdy., pr.	120	.....		30,000,000	7 n. c.	1¾ Q.	Apr., 1912
American Loc	41	—1½	Oct. 15	25,000,000	5	1¼ Q.	Aug., 1908
American Loc., pr.	108¼	+ ¼		25,000,000	7 cum.	1¾ Q.	Apr., 1912
American Ship	50⅞	.....	Oct. 9	7,600,000	4	2 Q.**	June, 1911
American Ship, pr.	101	.....		7,900,000	7 n. c.	1¾ Q.	Apr., 1912
Am. Steel Foundries	36	—1¼	Mar. 21	17,184,000	5	1¼ Q.	May, 1911
Barney & Smith	10	.....	June 4	2,000,000	4	1 Q.	Dec., 1907
Barney & Smith, pr.	75	.....		2,500,000	8 cum.	2 Q.	Dec., 1911
Bethlehem Steel	36	—2	April 2	14,862,000		.....	
Bethlehem Steel, pr.	70	—1⅞		14,908,300	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	42¾	— ½	Mar. 19	45,000,000*	5	1¼ Q.	May, 1912
Cambria Iron	43½	+ ½		8,468,000*	4	2 S. A.	Apr., 1912
Chicago Pneumatic Tool	48	.....	Feb. 19	6,448,800	4	1 Q.	Apr., 1912
Colorado Fuel	27	—1¾	Oct. 21	34,235,500		1¼ Q.	Apr., 1902
Crucible Steel	12	— ¼	Nov. 15	24,578,400		.....	
Crucible Steel, pr.	84	+ ¼		25,000,000	7 cum	1¾ Q.	Mar., 1912
Empire Steel	5	.....	Feb. 28	1,254,770		.....	
Empire Steel, pr.	45	.....		2,500,000	6 cum.	2 S. A.	July, 1911
Fay & Egan	75	.....	Feb. 20	1,000,000	7	1¾ Q.	Nov., 1908
Fay & Egan, pr.	115	.....		1,000,000	7 cum.	1¾ Q.	May, 1912
General Electric	167	—4	May 14	77,281,200	8	2 Q.	July, 1912
Harbison-Walker	39	.....	Jan. 15	18,000,000	2	½ Q.	Mar., 1912
Harbison-Walker, pr.	100	.....		9,600,000	6 cum.	1½ Q.	Apr., 1912
International Pump	26⅛	—2⅞	Dec. 10	17,762,500		½ Q.	Apr., 1905
International Pump, pr.	80	—1		11,350,000	6 cum.	1½ Q.	May, 1912
Lackawanna Steel	31	+2	Mar. 13	34,978,000		.....	
Lake Sup. Corp	31⅜	+2⅞	Oct. 2	40,000,000		.....	
New York Air Brake	61½	+5½	Mar. 13	10,000,000	6	1½ Q.	July, 1911
Niles-Bement-Pond	95	.....	Feb. 7	8,500,000	6	1½ Q.	June, 1912
Niles-Bement-Pond, pr.	101	.....		2,000,000	6 cum.	1½ Q.	May, 1912
Otis-Elevator Co	75	.....	Mar. 18	6,358,600	4	1 Q.	Apr., 1912
Otis Elevator Co., pr.	100	—1		6,375,300	6 n. c.	1½ Q.	Apr., 1912
Pa. Steel	60	.....	May 13	10,750,000		.....	
Pa. Steel, pr.	103	.....		20,587,500	7 n. c.	3½ S. A.	May, 1912
Pittsburgh Coal	22	—1¼	Mar. 12	28,104,600		.....	
Pittsburgh Coal, pr.	90	—1½		27,071,800	7 cum.	1¼ Q.	Apr., 1912
Pittsburgh Steel Co., pr.	102½	.....	Oct. 7	7,000,000	7 cum.	1¾ Q.	June, 1912
Pressed Steel Car	33⅛	—2⅛	Feb. 21	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr.	102	+ ¼		12,500,000	7 n. c.	1¾ Q.	May, 1912
Pullman	159½	— ½	Nov. 13	120,000,000	8	2 Q.	May, 1912
Railway Stl. Spring	34	— ⅝	Mar. 7	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr.	100⅝	.....		13,500,000	7 cum.	1¾ Q.	June, 1912
Rep. Iron & Steel	21⅞	—1⅞	Oct. 16	27,191,000		.....	
Rep. Iron & Steel, pr.	76	—2½		25,000,000	7 cum.	1¾ Q.	Jan., 1912
Sloss-Sheffield	49	—1	Mar. 13	10,000,000	5	1¼ Q.	Sept., 1910
Sloss-Sheffield, pr.	100	.....		6,700,000	7 n. c.	1¾ Q.	Apr., 1912
U. S. Pipe & Fdy. Co.	20	—1	June 26	12,500,000		1 Q.	Dec., 1907
U. S. Pipe & Fdy. Co., pr.	56	.....		12,500,000		1¼ Q.	June, 1911
U. S. Steel	67⅜	—2⅜	April 15	508,302,500	5	1¼ Q.	June, 1912
U. S. Steel, pr.	110½	— ⅜		360,281,100	7 cum.	1¾ Q.	May, 1912
U. S. Steel 5s	102⅛	+ ⅛		465,189,500	5	5 Q.‡	
Va. Iron, Coal & Coke	58¼	—2¾	Sept. 17	9,073,680		.....	Oct., 1907
Westinghouse Air Brake	170½	— ½	Oct. 1	20,000,000*		5. †	Apr., 1912
Westinghouse Electric	71½	—2½	June 12	3,998,700*	7 cum.	1¾ Q.	Apr., 1912

Par value of shares, $100, except those starred (*), $50.
**Includes last 1 per cent payment of 4 per cent extra.
†Stock.
‡Include 2½ regular, 1½ extra and 1 special.

Copper Stocks

New York.—Amalgamated Copper closed 82⅜, a net loss of ⅞.

Boston.—Anaconda closed 42¾, a net gain of ¼; Calumet & Arizona closed 74½, a net gain of 2⅜; Calumet & Hecla closed 490, a net gain of 2; North Butte Mining closed 28, a net loss of 1; Quincy Mining closed 87½, a net loss of 3.

Financial Notes

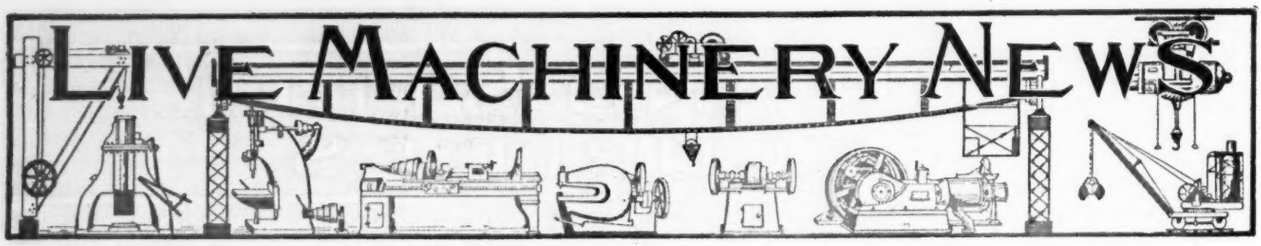
The General Electric Co. has declared the regular quarterly dividend of 2 per cent, payable July 15.

The Federal Mining & Smelting Co. has declared a quarterly dividend of 1½ per cent on preferred stock, payable June 15.

The regular quarterly dividend of 1½ per cent was paid recently by the Ashton Valve Co.

The Calumet & Hecla Copper Co. has declared a dividend of $10 per share, payable June 20.

The Quincy Mining Co. has declared a quarterly dividend of $1.25 per share, an increase of 25 cents a share over the last declaration.



In New York the volume of machinery orders continues to make a gratifying total of business. Manufacturing interests, which have been the chief support of the trade since the first of the year, still hold the lead as buyers, the railroads being ultra conservative in comparison to the general improvement of business. The railroad equipment companies in the Pittsburgh district have begun to anticipate plant requirements by inquiring for machine tools and special apparatus among New York sellers. This has added notable stimulus to the eastern trade. It emphasizes the belief that big business interests have substantial faith in the future, which has been developing the last few months.

In Pittsburgh some fairly large orders are being negotiated for in the machinery market, and manufacturers are reporting inquiries as keeping up at a slightly better rate than a week ago. Prices have not shown any marked change, and competition is checking any upward trend except as is forced by the higher prices of raw materials.

In Cleveland the market remains about the same as it was the greater part of last month, and sellers claim conditions could be much improved. No important change for the better is expected before fall. Several small inquiries for tools were out early this week and a few fairly good orders were filled. Demand for power plant equipment and second hand machinery has not increased.

In the west the machinery trade is a little more active, although most of the buying is still in small lots. The Atchison, Topeka & Santa Fe railroad is in the market for a list including 29 tools. Sales of power plant, power transmission and electrical equipment continue very satisfactory.

Water Works

The city of Vernon, B. C., is asking for tenders up to June 10 for 17,000 feet of 4-inch cast iron pipe, 10,500 feet of 6-inch cast iron pipe, 125 gate valves and 36 hydrants ranging in size from 4 inches to 8 inches.

There is considerable waterworks construction pending in the west. Aguilar, Colo., will shortly be in the market for machinery to cost about $70,000 and it is reported that an equal sum will be expended for waterworks improvements, including the construction of a new pumping station, at Mishawaka, Ind. Georgetown, Ill., proposes to construct a waterworks to cost $10.000, and Breese, Ill., is in the market for two 750,000-gallon steam pumps.

Power Plant Equipment

The Pennsylvania Railroad Co. has awarded a contract for a new power plant at Pitcairn, Pa., for use about the terminal yards at that point.

Bids will be received at Coleraine, Minn., until June 15, by W. W. Hunter, city clerk, for the construction of an electric light plant.

The Wisconsin Electric Railway Co., with headquarters at Oshkosh, Wis., has let contracts for the installation of a new 300-horsepower boiler in its plant at that place.

The Berryman Realty Co., Lexington, Ky., is ready to receive bids on the equipment of its new theater building in that city. The structure will have a lighting and heating plant.

The Eastern Pennsylvania Power Co., Easton, Pa., B. F. Franklin, superintendent, is figuring on a new 13,000-horsepower generating plant, to be equipped with automatic stokers and other modern apparatus.

The Keokuk Gas & Electric Co., Keokuk, Ia., will erect a new substation to cost $100,000. This will contain considerable electrical equipment which will be purchased by Stone & Webster, of Boston.

The Alamance Power Co., Burlington, N. C., will build a hydro electric plant at River Falls on the Haw river, and about $30,000 will be expended on the project. F. L. Williamson, J. H. White and C. E. Menefree are among those interested in the company.

A central power plant is to be established at Johnstown, Pa., by the Citizens Light, Heat & Power Co. for lighting through eight different townships and Somerset county. P. J. Morrissey, August Weis and J. W. Blough, of Johnstown, are the incorporators of the company.

A charter is being applied for at Harrisburgh, Pa., by the Elizabeth Township Electric Co., of Pennsylvania, to build an electric power plant and distributing lines in Elizabeth township of Allegheny county. William H. Larimer, F. J. Taylor and W. R. Hammer are the incorporators.

We are advised by the Berlin Public Service Co., S. W. Erwin, president, Berlin, Wis., that this corporation has purchased the plant and property of the Berlin Gas Co., and at the present time new 300-horsepower boilers with American stokers and direct-connected fans are being installed in the power plant. It is not expected that there will be any further extensions this year.

Westinghouse, Church, Kerr & Co., New York, have been retained to construct additions to the plant of the Utah Light & Railway Co., Salt Lake City. The original 8,500-kilowatt station was built by Westinghouse, Church, Kerr & Co., in 1910. The addition will be 100 feet long and 60 feet wide, of brick and steel construction. The new equipment will include one 8,500-kilowatt turbo-generator with condenser and six 600-horsepower boilers. There will also be a radial brick stack 11½ feet in diameter and 225 feet high.

Machine Tools

The Roberts Portable Oven Co., Chicago, is in the market for a small angle shear, a drill press and some other tools.

Additional machinery is needed by the Arctic Ice Co., Chattanooga, Tenn., which plans a large increase in capacity. E. O. Wells is general manager of the company.

The Dunham Co., Berea, O., is in the market for three motors, an air compressor and a band saw, which have been used and are in first class condition.

The Northern Engineering Works, Detroit, has the contract for installing five 10-ton cranes for the H. K.

Porter Locomotive Co. in the new plant addition at Forty-ninth street and A. V. railroad, Pittsburgh. The building will be 100 x 300 feet, three stories high.

The United States Light & Heating Co., Niagara Falls, N. Y., has a list of machine tools in the New York market, that involves about $40,000. The company has been a large buyer of machinery in this territory since the completion of the Niagara plant.

The Detroit Tool Co., Detroit, Mich., recently incorporated, advises that it has installed a modern machine shop for the purpose of making high grade machine tools. The company owns the Detroit combination tool and also a half interest in the Grant Automatic Machine Co. and has the exclusive contract for manufacturing the special machinery owned under patents by that company.

New Construction

The Massillon Bridge & Construction Co., Massillon, O., is building a one-story steel and brick addition to its plant to enlarge capacity.

The Dudly Tool Co., Menominee, Mich., manufacturer of wrenches, is erecting an addition, 40 x 60 feet, to its plant.

The contract for a new office and laboratory at the plant of the Woodward Iron Co., at Woodward, Ala., has been awarded.

The Berry-Weh-Miller Machinery Co., St. Louis, will erect a new factory containing new equipment, to cost about $75,000, on Rosalia street, St. Louis.

Kimball & Dietrich, Elgin, Ill., manufacturers of gas ovens, are planning the erection of a sheet metal shop, 34 x 130 feet, two stories, at that city.

Plans are being prepared by the Duff Mfg. Co., Pittsburgh, for its new plant on the north side. W. G. Wilkins of the Westinghouse building is the consulting engineer.

The Olson Mfg. Co., Sioux City, Ia., is planning the erection of a two-story factory building, 32 x 122 feet, which will be equipped for the manufacture of valve seats.

Construction of the plant of the Breslin Boiler Works, Ft. Smith, Ark., has begun. It will be 130 x 140 feet and will be equipped with the latest mechanical appliances, and cost $65,000.

The Mueller Brass Co. has completed plans for a factory at Sarnia, Ont. The buildings will be erected in units, of brick and steel construction, and over 370 feet in length. All the machinery has been purchased.

The Obenberger Drop Forge Co., 220 to 224 Lake street, Milwaukee, contemplates the erection of a new plant. A site has not yet been selected. It is intended to have the new works in operation by Oct. 1.

The Hawley Down-Draft Furnace Co., Easton, Pa., contemplates erecting a steel foundry addition, 150 x 250, one-story, to its plant at Easton. More definite information is expected before fall.

The Wheeling Mold & Foundry Co., Wheeling, W. Va., has acquired several acres of ground adjacent to its Peninsula plant and will shortly begin the erection of extensive additions.

The Worcester Pressed Steel Co., Worcester, Mass., desires bids on a concrete and steel mill, one story, with monitor roof, and 100 x 100 feet, to be erected this summer. The contract is to be let before July 1.

The Roth Gear & Tool Co., Lafayette, Ind., has selected a site for its new factory for the manufacture of steering gears for automobile trucks. The new building will cover 50,000 feet of floor space.

The Virginia Bridge & Iron Co., Roanoke, Va., advises that improvements to be made at its plant cover principally the extensions of its crane runways and roofs for them, which the company will manufacture in its own shops.

The Standard Underground Cable Co., Pittsburgh, will erect a building, 40 x 100 feet, two stories, to be used as a machine shop for the manufacture of terminals and junction boxes used in connection with underground cables. It will be equipped with special machinery for the company's purposes.

The Allen Engineering Co., Memphis, Tenn., advises it is erecting a building, 50 x 170 feet, four stories, including basement. The building faces South Main street and runs back to an Illinois Central railroad spur in the rear. It will be used as a general office building and a machinery and power equipment warehouse.

The Walsh & Weidner Boiler Co., Chattanooga, Tenn., advises that it will erect another building for the purpose of handling sheet iron work and light tank work. This shop will be 93 feet wide and 144 feet long, and of steel fireproof construction. The contract for the building has been placed. The question of purchasing machinery has not been taken up.

The Malleable Iron Range Co., Beaver Dam, Wis., has awarded contracts for constructing four buildings, all of mill construction. The main building will be 60 x 125 feet, two stories, for warehouse purposes; the second will be 26 x 72 feet, for casting storage; the third, an annealing room and tumbling mill, will be L-shaped, 52 x 52 feet, one story; the fourth, a flask storage, 20 x 62 feet, two stories. The architects are Raeder & Wood, of Chicago, and the general contractor, Daniel B. Danielson, of Milwaukee.

The Standard Steel Car Co., Pittsburgh, through its Middletown Car Co. branch at Middletown, Pa., has commenced the work of enlarging the eastern plant and is erecting one building 344 x 80 feet and another 275 x 80 feet. New shearing, pressing and pumping departments will be installed in these structures as well as over-head traveling cranes, one 1,000-ton hydraulic press and one 500-ton press for pressing forms for the steel car work. A third structure, 30 x 65 feet, is to be erected at once, and is to be known as the hydraulic-power building.

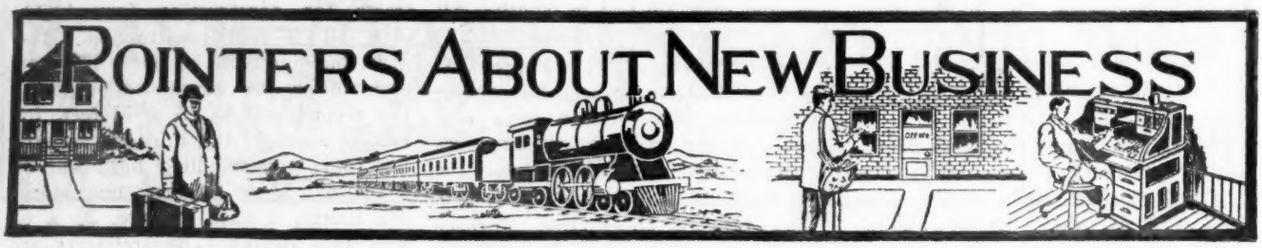
Miscellaneous

The Mauston Aluminum Co., Mauston, Wis., a new concern, has started manufacturing and its first products are now on the market. No further purchases of equipment are contemplated before July 1.

The Laycock Power House Co., controlled by the same interests owning the T. B. Laycock Mfg. Co., Indianapolis, has sold the Industrial building to the General Industrial & Mfg. Co., for $350,000. The building is the largest power building in Indianapolis. The new owner manufactures automobile trucks.

The United States Express Co. has acquired the entire block front on Harrison street, Hoboken, N. J., between Second and Third streets. A large building to be equipped for handling the company's express business will be erected on the property. It is estimated that the improvement will involve approximately $500,000.

Men in charge of the Nittany Iron Co. and the Bellefonte Furnace Co., at Bellefonte, Pa., have received orders from the New York offices to ship four carloads of iron a day from each furnace and to put in blast the Bellefonte furnace as soon as the stack is cleaned up. Both plants have been idle for the past ten years. The Bellefonte Foundry & Machine Shops, which have been idle for about three years, will soon be put in operation, as a company is being formed for that purpose.



New Buyers

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

The following manufacturing companies have filed articles of incorporation:

United States Cotton Ginning Co., Wilmington, Del.; $2,500,000; by E. E. McWhiney.

American Spiral Spring & Mfg. Co., Pittsburgh; $50,000; by John Pfeil, William McConway Jr., Robert E. L. Bailey, John B. Thomas and J. N. Wolfe, all of Pittsburgh.

Blake Hydraulic Valve Corporation, Boston; $50,000; to manufacture valves; by George A. Blake, New Bedford; Kenneth L. Childs, Middleboro.

The Silverman & Ackerman Co., Toledo; $20,000; metals, minerals and waste products; by Jerome Ackerman, James J. Flynn, Isidor Silverman, Joseph I. Kobacker, Julius Elkes.

Buffalo Bridge Co., Buffalo; $50,000; structural steel work, etc.; by Harry A. Feindt Jr., 33 Columbus place; George L. Ballou, 179 Franklin street, Michael L. Skelly, 174 Franklin street, Buffalo.

Merritt Street Sweeping Machine Co., New York City; $50,000; to manufacture street sweeping machinery, etc.; by F. B. Knowlton, E. J. Forhan, John McLaren, 164 Nassau street, New York City.

Boyd Engineering Co., Ltd., Manhattan, New York City; $20,000; engineering and construction; Verne M. Bovie, Frank P. Wilson, and Thomas S. Rhodes, all of 3 Broad street, New York City.

Vacuum Massager Mfg. Co., Manhattan, New York City; $10,000; to manufacture vacuum massage machines, etc.; by F. C. Howe, 31 Broadway; V. C. Borgardus and A. L. Friedberg, both of 150 Nassau street, New York City.

New York Faucet Co., Manhattan, New Cork City; $100,000; to manufacture plumbing supplies; by Robert J. Horner, 61 West Twenty-third street; Joseph G. F. Squires, 1125 Lenox avenue, New York City; Charles F. Holcomb, Bridgeport, Conn.

Holder Welding Equipment Co., Brooklyn; $25,000; to manufacture welding machinery, etc.; by Chas. Holder Jr., 22 Emmett street, Brooklyn; Solomon Heller and David E. Heller, both of 248 E. Northampton street, Wilkes-Barre, Pa.

Pyro Extinguisher Co., Syracuse, N. Y.; $40,000; to manufacture and deal in fire extinguishers, etc.; by Wilbur Allen, 357 West Onondaga street, Ella D. Allen, 357 West Onondaga street; Walter H. Tibbals, 209 East Clovin street, Syracuse.

High Tension Engineering Co., Philadelphia; $10,000; to manufacture electrical apparatus or machinery, etc.; by Franklin S. Smith, 5209 Chester avenue; R. M. Vanderherchen, 5100 Wayne avenue; Alexander Rennick, 5100 Wayne avenue, all of Philadelphia.

Simplex Aluminum Solder Co., Inc., Borough Queens; $25,000; to manufacture and deal in aluminum solder, hardware, etc.; by Charles R. Erkens, 255 West 143rd street; Henry Bender, 74 First avenue, New York City; Charles Decker, 8416 Seventeenth avenue, Brooklyn.

The Composite Metal Lath Co., Manhattan, New York City; $500,000; to manufacture and deal in metal lath, etc.; by Joseph L. Young, 209 Adelphi street, Brooklyn; Gus W. Solkey, 2 Rector street; Anna G. McConnell, 410 East 141st street, New York City.

Suburban Equipment Co., Manhattan, New York City; $10,000; to manufacture and deal in machinery motors, etc.; by Harrison O. Otis, 2 Rector street; Charles A. Parker, 702 Monroe street, Brooklyn; Wendell P. Barker, 100 William street, New York City.

General Industrial

The Continental Engine Co., Chicago, has increased its capital stock from $10,000 to $50,000.

The Empire Iron & Steel Co., Niles, O., has reduced its capital stock from $1,000,000 to $6,000.

The H. G. Davis Co., Philadelphia, has been incorporated to manufacture machinery.

The Pittsburgh Steel Foundry Co., Pittsburgh, has increased its capital stock from $400,000 to $1,000,000.

The Ross Gear & Tool Co., Lafayette, Ind., has filed notice of the issuance of $100,000 preferred stock.

The announced indebtedness of the Shenango Steamship & Transportation Co., Pittsburgh, has been increased from $467,000 to $704,000.

The General Electric Co. has awarded a contract for steel requirement for an addition to its manufacturing plant at Pittsfield, Mass.

The Louisville Bridge Co. has a contract for the structural material to be used in the mercantile plant of Harry Weissinger in Louisville, Ky.

The Marion Motor Car Co., Indianapolis, has increased its capital stock from $100,000 to $1,125,000 and will take over the Marion Sales Co.

The King Foundry Co., St. Joseph, Mo., has increased its capital stock from $15,000 to $20,000 and will make extensions to its plant.

The Atlantic Refining Co., Pittsburgh, is preparing a concrete foundation for two 40,000-gallon steel tanks at its plant on the Allegheny river.

The American Cash Register Co., Dayton, O., has been taken over by a new company incorporated as the American Cash Register Mfg. Co., with a capital of $600,000.

The C. H. Bosley Co., Chicago, manufacturer of tools, has asked the common council of Beloit, Wis., for the vacation of a street to permit enlargement of its shops in that city.

The Hubbard Steel Foundry Co, Chicago, has increased its capital stock from $400,000 to $500,000 and the number of directors has been decreased from seven to five.

The Modema Paper Mills, Coatesville, Pa., has broken ground for an addition to the plant which will require additional machinery and equipment.

The Elevator Engineering Co., Chicago, has changed its name to Prince Elevator & Machine Co., and increased its capital stock from $5,000 to $20,000.

The Allis-Chalmers Co., Milwaukee, Wis., has been awarded a contract for a new pumping engine for the west side station at St. Paul, Minn. The contract price is $7,870.

Simon L. Adler, Evansville, Ind., will erect a $200,000 hotel. The plant will be of reinforced concrete con-

struction. Mr. Adler is the proprietor of the Acme hotel, of Evansville.

Stockholders of the Sioux City Foundry Co., Sioux City, Ia., at a recent meeting, made plans to appeal to court to have the receivership of the company dissolved.

The Eagle White Lead Co., Cincinnati, will erect a four-story concrete factory and warehouse at its present location, Hunt and Broadway streets. The building will cost $23,000.

County Judge Cleary, of Covington, Ky., is in charge of plans for the construction of a bridge over Licking river at Kenton station. The cost of the bridge will be $25,000.

The Lyons Sons Brewing Co. will increase the size of its machine shop at 95 Commerce street, Newark, N. J. Additional machinery will be installed.

The Cadillac Motor Car Co., Detroit, Mich., has purchased a new factory building from the Long-Nyes Co., and will be in the market for some additional equipment for its machine shop.

The National Equipment Co., Springfield, Mass., will construct a new factory, requiring 350 tons of structural steel. The building will be equipped with the most modern machinery.

The Stenman Wire Goods Specialties, Inc., Worcester, Mass., has been organized by Ellis F. Stenman, formerly master mechanic for the Morgan Spring Co. The new company will manufacture wire goods.

The Miller-Richardson Mfg. Co., Worcester, Mass., has been succeeded by the Miller Wire Cloth Co., organized with a capital stock of $20,000, with Martin M. Miller as head. Additional floor space has been acquired.

Bids have been received for a two-story brick and concrete car repair shop for the Wheeling Traction Co., Wheeling, W. Va. The company expects to commence construction at once.

The Hartford Suspension Co., Jersey City, N. J., will enlarge its plant by an additional building, 75 x 127 feet, six stories. The company will be in the market for manufacturing equipment in the near future.

The Wisconsin Structural Bridge Co., Appleton, Wis., has been awarded the contract for building a steel drawbridge over Fox river at Kimberly, Outagamie county. The price is in the neighborhood of $25,000.

It is expected that arrangements will be completed in the immediate future for the construction of a railway viaduct in South Louisville. David R. Lyman, city engineer of Louisville, is in charge of the plans.

Vincent C. Getty, Louis McKelvey and Grayson M. Metz, of Pittsburgh, have asked for a charter for the Hulton Iron Co. to manufacture iron or steel or both. It is understood that the company proposes to operate a plant at Hulton, Pa.

The Peacock Iron Co., Gadsden, Ala., advising in regard to its negotiations with the Gadsden Car Works to supply the company with $5,000 worth of car wheels each month, says the matter is not far enough advanced to give any information.

The Buckeye Rolling Mill Co., Steubenville, O., is in the market for a second-hand heavy duty 30 or 32 x 48 Corliss engine. A band or fly wheel not over 14 feet in diameter is preferred. Nothing but a first class engine will be considered.

The Aberthaw Construction Co. has received a contract to erect a building, 91 x 57 feet, for the Winchester Repeating Arms Co., New Haven, Conn. The structure will be six stories, with tower. L. W. Robinson, New Haven, is the architect.

The Falls City Construction Co., Louisville, is making arrangements for the construction of a hotel of large size in Savannah, Ga. The company will design, build and finance the hotel, which it is expected will cost $600,000. The details of the plant are now being worked out.

The Hughes Warehouse & Elevator Co., Nashville, Tenn., advises that it is impossible to say just at present whether its property which was recently destroyed by fire will be rebuilt. The company does expect, however, to build a warehouse for storage purposes.

The Woodward Iron Co. has increased its new order for by-product coke ovens from 70 to 80 ovens and the H. Koppers Co., with whom the order was placed, expects to start excavation work on the new contract about June 15. C. V. McIntire will be the erecting engineer.

At a meeting of the executive committee of the Wisconsin state board of normal regents, held in Madison, Wis., recently, it was decided to erect an industrial school building in connection with the Oshkosh normal school, at Oshkosh, Wis. It will cost about $75,000.

The Sweet's Steel Co., Williamsport, Pa., announces that its improvements are practically completed and consist of new mills, furnaces, buildings, power plant, etc., which will more than double its capacity. The improvements are of the most modern design.

No building or equipment will be required by the Pitt Motor Truck Co., North Side, Pittsburgh, recently incorporated, as it has purchased the property formerly owned by the Lyon Motor Truck Co. The newly organized company will manufacture light and medium motor trucks.

The real estate, plant, equipment and good will of the Nicetown Plate Washer Co., Juniata and Clarissa streets, Nicetown, Philadelphia, Pa., are for sale. The plant, covering more than one acre, has a capacity of from 10,000 to 12,000 tons of bars and 20,000 kegs of washers annually.

The New York, New Haven & Hartford Railroad Co. has filed plans for a one-story brick shop, to be erected at Van Ness and Matthews avenues, New York City. The building will be 63 x 42 feet, and will cost about $10,000. W. Lord, New Haven, Conn., prepared the plans.

The Noelke-Richards Iron Works, Indianapolis, has been given the contract for the structural steel to be used in the $250,000 Y. M. C. A. building in Louisville. The Wells Bros. Co., of Chicago, is the general contractor. The Illinois Steel Co., of Chicago, will furnish the reinforcing bars.

The schedules of the United Engineering & Mining Co., recently adjudged a bankrupt, have been filed in the federal district court, New York, showing total liabilities of $712,266, of which $145,250 are secured, $511,880 unsecured, $35,173 due for wages and $19,505 due for other debts. Assets are placed at $673,214.

Bids received for the assets of the New Process Steel Co., Detroit, Mich., were not proportionate to the value of the property in the opinion of the Detroit Trust Co., as receiver, and it has decided to dismantle the steel company's plant and sell the equipment, stock and office furniture at private sale.

The following Pennsylvania companies have increased their indebtedness: The Quincy Engine Co., Quincy, Pa., from nothing to $25,000; the Perry Iron Co., Erie, Pa., from $240,000 to $500,000; the Siegfried Motor Car Co., Siegfried, Pa., from nothing to $4,000; Metal Products Co., Beaver, Pa., from nothing to $25,000.

A lead corroding factory and casting house are being built at Huntingdon street and Aramingo avenue, Philadelphia, for John T. Lewis & Bros. Co. The front building, which will measure 185 x 265 feet, will be a one-story structure, while the back building will have dimensions of 60 x 120 feet and will be three stories.

The Fuerst-Friedman Co. is asking bids for the plant of the Mann Indicator & Mfg. Co., Alliance, O., which it recently bought. Bids will be re-

ceived for the entire plant or any part of it. The Fuerst-Friedman Co. can be corresponded with by addressing mail to 2213 East Ninth street, Cleveland, or general delivery, Alliance.

With an authorized capitalization of $30,000, the Automatic Machinery Co. has been organized and incorporated at Indianapolis, Ind., to manufacture labeling machinery. Those interested in the concern are John A. Hook, 1422 East Ohio street; Walter E. Evans and J. D. Lambertson.

Creditors of the Eastern Tube Co., formerly of Zanesville, O., have been notified by Special Master Commissioner E. N. Huggins that there remains on deposit with the federal court at Cincinnati a fund still to be distributed to them. They must present their claims on or before July 1 in order to share in the distribution.

Liquidator John M. Taylor will receive tenders, by registered mail only, for the purchase of the assets of the Standard Fitting & Valve Co., Ltd., a going concern, located at Guelph, Ontario. The assets include real estate, boiler and engine room, machine shop, warehouse and office, foundry, core room and cupola house, pattern warehouse and machinery. Mr. Taylor's address is box 1450, Guelph.

The Raymond Bros. Impact Pulverizer Co., Chicago, manufacturer of pulverizers and air separating machinery, has purchased a lot with a frontage of 250 feet on South Eastman street and 224 feet on North Branch street, Chicago, from Frederick W. Crosby and will erect a new plant which will require considerable machinery and equipment. The estimated cost is $100,000.

Charles E. Coffin, president of the Central Trust Co., has been appointed receiver, and Sol Meyer, of the Meyer-Kiser bank, co-receiver, for the T. B. Laycock Mfg. Co., Indianapolis, Ind., manufacturer of iron beds and bed springs. The proceedings were brought owing to the company's inability to meet $150,000 indebtedness at this time. Assets are estimated at $1,000,000 and liabilities at about $400,000.

The Thompson Mfg. Co., Newark, O., advises that its plant has been completed and that it expects to install three new punch presses in the near future and some additional tools. The company manufactures horse clamps and other metal stampings. It was incorporated with a capital stock of $35,000 and expects to do job galvanizing and stamping of various kinds, but its principal product is its patented horse clamp.

The Pittsburgh Air Brake Co., Pittsburgh, is asking for a charter at Harrisburg with J. Rodgers Flannery, Rush Snyder and Percy E. Donner as incorporators. The plans of the company are not sufficiently developed to make any public announcement, but the application for the charter states that it is intended to manufacture and sell air-brakes, air valves, and all other apparatus, appliances and devices for braking cars and vehicles, trains and machinery. It is understood that the company has some patents which it will develop along this line.

Trade Notes

The Baldwin Locomotive Works now has 10,455 men employed and the shops are busier than at any other time in months past.

The Pennsylvania Steel Co., Steelton, Pa., has orders for 4,200 tons of rails and 500 tons of girders for the Harriman lines.

The Nelson Valve Works and the American Engineering Works, both of Philadelphia, are working nights in an effort to catch up with orders.

The treating department of the Standard Steel Works at Harrisburg, Pa., is being enlarged and more furnaces are going up.

The Bridgeport Cornice Works, Bridgeport, Conn., has moved into its new plant at 800 Broad street, that city.

The Newport Rolling Mills, Newport, Ky., because of increasing business, will close for two or three weeks in July in order to increase the capacity of its boiler plant.

The De Forest Sheet & Tin Plate Co., Niles, O., is installing a new galvanizing and dipping plant with cranes and accessories, which will double the capacity of the galvanizing department.

The Standard Meter Co., 433 West Forty-second street, New York, has let the general contract for a manufacturing building. The Great Eastern Construction Co., 45 West Thirty-fourth street, received the award.

The Otis Elevator Co., Pittsburgh, has been awarded the contract for installing an additional elevator system in the Fort Pitt hotel in connection with the addition of 400 rooms to the building, work upon which was started this week.

C. B. Porter Co., 128-130 N. Second street, Philadelphia, manufacturer of tin ware and tin cans and dealers in tin plate, metals, etc., advise that the recent incorporation of the business involves no change of policy or management. The business has been established for more than 60 years.

The George A. Fuller Co., Chicago, is carrying considerable unfinished business on its books, a summary for the year showing the amount to be $16,479,732, which, together with new business taken on during the year, $21,503,427, makes a total of $37,983,159. Completed work during the year is shown to be $19,063,957.

All of the structural steel for the 16-story Merchants National Bank building under construction at Meridian and Washington streets, Indianapolis, is being fabricated and erected by the Noelke-Richards Iron Works, that city. The steel work probably will be completed within the next ten days.

The National Iron & Steel Co., Houston, Tex., which has placed orders with eastern mills for 20,000 kegs of new track spikes, several thousand kegs of track bolts and 75,000 pairs of angle bars, has divided its orders among the Republic Iron & Steel Co., the Jones & Laughlin Steel Co., and the Lebanon mills.

The Spokane Ornamental Iron Works, Spokane, Wash., will furnish all of the ornamental iron for three of the largest buildings being constructed in Vancouver and Victoria, B. C. They are the Union Club building, Victoria; and the British Columbia Securities and the Northwest Loan Co.'s building at Vancouver.

Robert Wetherill & Co., Chester, Pa., boiler and engine makers, have received an order for a high speed plunger elevator equipment for the new Hall of Records in New York City. The company's bid was $465,400. The company has also been awarded a contract for 10 500-horsepower engines and generators for the Lebanon Valley Iron & Steel Co.

The Earle Gear & Machine Co., Philadelphia, which recently increased its capital stock from $40,000 to $130,000, states that this action was followed to enable the company to take title to its real estate and plant at Stanton and Wyoming avenues, which heretofore has been held personally by Edgar P. Earle, the president. No changes are contemplated at the present time.

John R. McGinley, chairman of the Pittsburgh Screw & Bolt Co. and president of the Duff Mfg. Co., has authorized the statement that these companies will be centralized in one plant with the completion of the plants to be located on ten acres in Preble avenue, North Side, Pittsburgh, the property formerly owned by the Riter-Conley Mfg. Co. The consolidation of these plants will give each more than double its present capacity.